

AUTHOR INDEX

Ecological Modelling, volumes 25-50

M

L

S

4

00

I

A

- Abdel-Razik, M.
A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179
- Abe, O., see Oi, K.
Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29
- Abel, D.E. and Niven, B.S.
Application of a formal specification language to animal ecology. I. Environment 50 (1990)205
- Acock, B., see Reynolds, J.F.
Predicting the response of plants to increasing carbon dioxide: a critique of plant growth models 29(1985)107
- Adachi, N., see Takeuchi, Y.
Dynamics and stability of ecological models 32(1986)95
- Adetiloye, P.O.
A mathematical model for formulating intercrop proportions for intercropping systems' design 27(1985)81
- Agarwal, M., see Shukla, J.B.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219
- Ågren, G.I., see Gorban, G.R.
Significance of changes in K_c values for Ca-Al exchange and its effects on soil and water acidification predictions 44(1988)165
- Ågren, G.I. and Bosatta, E.
Theory and model or art and technology in ecology 50(1990)213
- Aizen, M.A.
Fit of logspecies-logarea regression lines to nonequilibrium archipelagos: a simulation approach 47(1989)265
- Akiyama, T., see Shiyomi, M.
Modelling of energy flows and conversion efficiencies in a grassland ecosystem 32(1986) 119
- Alekseev, V.V. and Kornilovsky, A.N.
Ecosystems stochasticity model 28(1985)217
- Alig, R.J. and Wyant, J.G.
Projecting regional area changes in forestland cover in the U.S.A. 29(1985)27
- Allen, S.E., see Henderson-Sellers, B.
Verification of the plume rise/dispersion model USPR: plume rise for single stack emissions 30(1985)209
- Amano, K., see Ichikawa, A.
Modeling for estimating representative water conditions in a river basin 32(1986)199
- Andreasen, V., see Iwasa, Y.
Aggregation in model ecosystems. 1. Perfect aggregation 37(1987)287
- Antonelli, P.I. and Kazarinoff, N.D.
Modelling density-dependent aggregation and reproduction in certain terrestrial and marine ecosystems: a comparative study 41 (1988)219
- Aoki, I.
Entropy balance in Lake Biwa 37(1987)235
- Aoki, I.
Entropy laws in ecological networks at steady state 42(1988)289
- Aoki, I.
Holological study of lakes from an entropy viewpoint - Lake Mendota 45(1989)81
- Armstrong, M.P., see Hanson, J.S.
Landscape fragmentation and dispersal in a model of riparian forest dynamics 49(1989) 277
- Arp, P.A. and McGrath, T.P.
A parameter-based method for modelling biomass accumulations in forest stands: theory 36(1987)29
- Arp, P.A., McGrath, T.P. and Beck, J.A.
A parameter-based method for modelling biomass accumulations in forest stands: an application 36(1987)49
- Ashikhmina, E.V., Frisman, E.Ya., Skaletskaya, E.I. and Kulikov, A.N.
Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145
- Ashton, P.J., see Cochrane, K.L.
An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207

Atkinson, C.A.

A nonlinear programming approach to the analysis of perturbed marine ecosystems under model parameter uncertainty 35(1987)1

Auclair, A.N.D., see Spiller, C.B.

A mathematical model of seasonal and spatial variation in phosphorus concentrations in Lake Memphremagog, Quebec 34(1986)143

B

Bachelet, D., Hunt, H.W. and Detling, J.K.

A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231

Bachelet, D.M., Hunt, H.W. and Detling, J.K.

Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83

Bacon, P.J.

Sensitivity coefficients - a reply to Huson 27 (1985)153

Bailian, L.

Pansystems analysis: a new approach to ecosystem modelling 32(1986)227

Bakule, L. and Straškraba, M.

On optimality in multispecies ecosystems 26 (1984)33

Bakule, L. and Straškraba, M.

On structural control strategies in aquatic ecosystems 39(1987)171

Barclay, H.J.

Host-parasitoid dynamics: effects of the position of density dependence 32(1986)291

Barclay, H.J.

Models of sterile insect releases for populations under attack by parasitoids 36(1987) 155

Barclay, H.J., see Fitz-Earle, M.

Is there an optimal sex ratio for insect mass rearing? 45(1989)205

Bartell, S.M., Brenkert, A.L. and Carpenter, S.R.

Parameter uncertainty and the behavior of a size-dependent plankton model 40(1988)85

Bartell, S.M., Cale, W.G., O'Neill, R.V. and Gardner, R.H.

Aggregation error: research objectives and relevant model structure 41(1988)157

Bartlett, E.T., see Jameson, D.A.

Selection of optimal management strategies based on stochastic dynamic ecological models 36(1987)5

Bartley, H.A., see Browder, J.A.

A probabilistic model of the relationship between marshland-water interface and marsh disintegration 29(1985)245

Baskin, L.B., see Carsel, R.F.

The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49

Batchelder, H.P. and Miller, C.B.

Life history and population dynamics of *Metridia pacifica*: results from simulation modelling 48(1989)113

Bax, N.J.

Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353

Beck, J.A., see Arp, P.A.

A parameter-based method for modelling biomass accumulations in forest stands: an application 36(1987)49

Behrendt, H., see Kozerski, H.-P.

Testing of a complex ecological model for shallow water bodies 26(1984)103

Behrendt, H., see Kozerski, H.P.

Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193

Bellin, A., see Rinaldo, A.

A study on solute $\text{NO}_3\text{-N}$ transport in the hydrologic response by an MRF model 48 (1989)159

- Belyaev, V.I.
Simulation of functioning of a complex ecosystem 26(1984)9
- Benderoth, G., see Janecek, A.
Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Bendoricchio, G., see Zingales, F.
A conceptual model of unit-mass response function for nonpoint source pollutant runoff 26(1984)285
- Benndorf, J., see Koschel, R.
Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59
- Bergner, P.-E.
On relations between bioaccumulation and weight of organisms 27(1985)207
- Bernardi, M., Mishoe, J.W. and Jones, J.W.
RAGHUA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Pennisetum americanum* and *P. typhoides* phenology 44(1988)275
- Bertonati, M., Dejak, C., Mazzei Lalatta, I. and Pecelik, G.
Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103
- Biondini, M.E., see Sala, O.E.
Bias in estimates of primary production: an analytical solution 44(1988)43
- Blake, G. and Gentil, S.
Ecological modelling of a high mountain reservoir in relation to particulate organic matter loading 35(1987)227
- Bobba, A.G. and Joshi, S.R.
Application of an inverse approach to a Canadian radioactive waste disposal site 46(1989)195
- Bobba, A.G. and Lam, D.C.L.
Hydrological modeling of acidified Canadian watersheds 50(1990)5
- Boddy, A.W., see North, P.M.
A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233
- Bohl, E., see Kreikenbohm, R.
Bistability in the chemostat 43(1988)287
- Bolla, M. and Kutas, T.
Submodels for the nutrient loading estimation on river Zala 26(1984)115
- Bölter, M. and Meyer, M.
Structuring of ecological data sets by methods of correlation and cluster analysis 32(1986)1
- Bölter, M.
Evaluation - by cluster analysis - of descriptors for the establishment of significant subunits in Antarctic soils 50(1990)79
- Bonan, G.B.
A computer model of the solar radiation, soil moisture, and soil thermal regimes in boreal forests 45(1989)275
- Bosatta, E., see Gorban, G.R.
Cation depletion rate as a measure of soil sensitivity to acidic deposition: theory 40(1988)25
- Bosatta, E., see Ågren, G.I.
Theory and model or art and technology in ecology 50(1990)213
- Bossel, H.
Dynamics of forest dieback: systems analysis and simulation 34(1986)259
- Bossel, H. and Schäfer, H.
Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48(1989)221
- Bosserman, R.W.
Sensitivity of cycling measures derived from ecological flow analysis 48(1989)45
- Botkin, D.B., see Morris, J.T.
Theoretical limits of belowground production by *Spartina alterniflora*: an analysis through modelling 26(1984)155
- Boucher, D.H.
Lotka-Volterra models of mutualism and positive density-dependence 27(1985)251

- Bowles, A., see Reed, M.
Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988)1
- Braat, L.C. and Van Lierop, W.F.J.
Economic-ecological modeling: an introduction to methods and applications 31(1986)33
- Braat, L.C., see Van der Ploeg, S.W.F.
Integration of resource economics and ecology 38(1987)171
- Bradbury, R.H., see Reichelt, R.E.
Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153
- Bradley, J.S., see McKay, R.J.
Erlangian models for capture-recapture data 40(1988)161
- Braner, M.
A simple random path method for the analysis of flow networks 28(1985)165
- Breck, J.E., DeAngelis, D.L., Van Winkle, W. and Christensen, S.W.
Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1
- Brenkert, A.L., see Bartell, S.M.
Parameter uncertainty and the behavior of a size-dependent plankton model 40(1988)85
- Brewer, J.W.
Spreadsheets, PC's, and the finite-difference solutions for ecological distribution 47(1989)65
- Brouwer, F. and Nijkamp, P.
A satellite design for integrated regional environmental modelling 35(1987)137
- Browder, J.A., Bartley, H.A. and Davis, K.S.
A probabilistic model of the relationship between marshland-water interface and marsh disintegration 29(1985)245
- Brown, J.B., see Helton, J.C.
Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides 28(1985)243
- Brüggemann, R., see Matthies, M.
Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47(1989)115
- Brunt, J.W. and Conley, W.
Behavior of a multivariate algorithm for ecological edge detection 49(1989)179
- Bundy, A., see Muetzelfeldt, R.
The use of prolog for improving the rigour and accessibility of ecological modelling 46(1989)9
- Byrne, S.V., Wehrle, M.M., Keller, M.A. and Reynolds, J.F.
Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63

C

- Cabeleira, A., see Câmara, A.S.
An economic-ecological model for regional land-use planning 31(1986)293
- Cacho, O.J.
Protein and fat dynamics in fish: bioenergetic model applied to aquaculture 50(1990)33
- Cajal, J.L., see Rabinovich, J.E.
A simulation model for the management of vicuña populations 30(1985)275
- Calambokidis, J., see French, D.P.
A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193
- Calambokidis, J., see Reed, M.
Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49
- Cale, W.G. and O'Neill, R.V.
Aggregation and consistency problems in theoretical models of exploitative resource competition 40(1988)97

- Cale, W.G., see Bartell, S.M.
Aggregation error: research objectives and relevant model structure 41(1988)157
- Cale, W.G., see Warwick, J.J.
Estimating model reliability using data with uncertainty 41(1988)169
- Cale, W.G.
Characterizing populations as entities in ecosystem models: problems and limitations of mass-balance modeling 42(1988)89
- Câmara, A S., Mano, A.P., Craça Martinho, M., Paula Marques, M., Nunes, J.F., Lopes, T.C. and Cabeleira, A.
An economic-ecological model for regional land-use planning 31(1986)293
- Carothers, P.E. and Grant, W.E.
Fishery management implications of recruitment seasonality: simulation of the Texas fishery for the brown shrimp, *Penaeus aztecus* 36(1987)239
- Carpenter, S.R., see Bartell, S.M.
Parameter uncertainty and the behavior of a size-dependent plankton model 40(1988)85
- Carruthers, R.I., Whitfield, G.H., Tummala, R.L. and Haynes, D.L.
A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- Carsel, R.F., Mulkey, L.A., Lorber, M.N. and Baskin, L.B.
The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49
- Caswell, H.
Theory and models in ecology: a different perspective 43(1988)33
- Caswell, H.
Analysis of life table response experiments. I. Decomposition of effects on population growth rate 46(1989)221
- Catchpole, E.A., Hatton, T.J. and Catchpole, W.R.
Fire spread through nonhomogeneous fuel modelled as Markov process 48(1989)101
- Catchpole, W.R., see Catchpole, E.A.
Fire spread through nonhomogeneous fuel modelled as Markov process 48(1989)101
- Cerrito, P.B.
Density estimation applied to stochastic abundance models 45(1989)221
- Chaudhuri, K.
A bioeconomic model of harvesting a multi-species fishery 32(1986)267
- Chaudhuri, K.
Dynamic optimization of combined harvesting of a two-species fishery 41(1988)17
- Chaudhuri, K.S., see Saha Ray, S.
Lotka-Volterra prey-predator model with harvesting and environmental perturbations 47(1989)283
- Chelazzi, G., see Focardi, S.
Theoretical analysis of rhythmical clustering in an intertidal gastropod 44(1988)177
- Chen, K.-W. and Papadopoulos, A.S.
A nonparametric method for estimating the joint probability density of BOD and DO 41(1988)183
- Cheng, Z.
Pansystems modelling in ecology 47(1989)275
- Cheng, Z.-B., Li, B.-L., Zou, C.-S. and Que, T.-L.
Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191
- Chertov, O.G.
SPECOM - a single tree model of pine stand/raw humus soil ecosystem 50(1990)107
- Chewings, V.H., see Pickup, G.
Random field modelling of spatial variations in erosion and deposition in flat alluvial landscapes in arid central Australia 33(1986)269
- Chikami, S., see Morioka, T.
Basin-wide ecological fate model for management of chemicals hazard 31(1986)267
- Childers, D.L. and McKellar Jr., H.N.
A simulation of saltmarsh water column dynamics 36(1987)211
- Christensen, P.P.
Classical roots for a modern materials-energy analysis 38(1987)75

- Christensen, S.W., see Breck, J.E.
Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1
- Christensen, T., see Jørgensen, S.E.
Validation of a prognosis based upon a eutrophication model 32(1986)165
- Chytil, I.
Dispersion of radioactive pollution in surface water 26(1984)145
- Cleveland, C.J.
Biophysical economics: historical perspective and current research trends 38(1987)47
- Cochrane, K.L., Ashton, P.J., Jarvis, A.C., Twinch, A.J. and Zohary, T.
An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207
- Coffin, D.P. and Lauenroth, W.K.
A gap dynamics simulation model of succession in a semiarid grassland 49(1989)229
- Collins, C.D., see Wlosinski, J.H.
Evaluation of a water quality model (CEQUAL-R1) using data from a small Wisconsin reservoir 29(1985)303
- Comins, H.N. and Fletcher, B.S.
Simulation of fruit fly population dynamics, with particular reference to the olive fruit fly, *Dacus oleae* 40(1988)213
- Conley, W. and Sengupta, U.
A demographic simulator with deeply coupled semantic and numeric data structures 46(1989)35
- Conley, W., see Brunt, J.W.
Behavior of a multivariate algorithm for ecological edge detection 49(1989)179
- Conroy, M.J., see Johnson, D.H.
The need for accuracy in modelling: an example 30(1985)157
- Cooke, J.R., see Upadhyaya, S.K.
Role of stomatal oscillations on transpiration, assimilation and water-use efficiency of plants 41(1988)27
- Costanza, R.
Model goodness of fit: a multiple resolution procedure 47(1989)199
- Costanza, R. and Sklar, F.H.
Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45
- Costanza, R., see Sklar, F.H.
Dynamic spatial simulation modeling of coastal wetland habitat succession 29(1985)261
- Costanza, R. and Daly, H.E.
Toward an ecological economics 38(1987)1
- Costanza, R., see Turner, M.G.
Methods to evaluate the performance of spatial simulation models 48(1989)1
- Coughenour, M.B., McNaughton, S.J. and Wallace, L.L.
Simulation study of East-African perennial graminoid responses to defoliation 26(1984)177
- Coughenour, M.B.
A mechanistic simulation analysis of water use, leaf angles, and grazing in East-African graminoids 42(1988)203
- Coughlan, J.C., see Running, S.W.
A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- Coulson, R.N., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125
- Coupal, B., see Morrison, K.A.
Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97
- Cowardin, L.M., see Johnson, D.H.
A model of the productivity of the mallard duck 38(1987)257
- Craça Martinho, M., see Câmara, A.S.
An economic-ecological model for regional land-use planning 31(1986)293
- Cropper Jr., W.P. and Ewel, K.C.
A regional carbon storage simulation for large-scale biomass plantations 36(1987)171
- Csetenyi, A.I. and Logofet, D.O.
Leslie model revisited: some generalizations to block structures 48(1989)277

Cubbage, J.C., see French, D.P.

A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193

Cubbage, J.C., see Reed, M.

Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49

Cuenco, M.L., Stickney, R.R. and Grant, W.E.

Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169

Cuenco, M.L., Stickney, R.R. and Grant, W.E.

Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191

Cuenco, M.L., Stickney, R.R. and Grant, W.E.

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

D

Dabrowski, K., Takashima, F. and Law, Y.K.

Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195

Dahlbo, K., see Virtanen, M.

Three-dimensional water-quality-transport model compared with field observations 31(1986)185

Dahlman, R.C.

Modeling needs for predicting responses to CO₂ enrichment: Plants, communities and ecosystems 29(1985)77

Dale, V.H., Doyle, T.W. and Shugart, H.H.

A comparison of tree growth models 29(1985) 145

Dale, V.H., Jager, H.I., Gardner, R.H. and Rosen, A.E.

Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165

Daly, H.E., see Costanza, R.

Toward an ecological economics 38(1987)1

Davis, J.R., Nanninga, P.M., Hoare, J.R.L. and Press, A.J.

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

Davis, K.S., see Browder, J.A.

A probabilistic model of the relationship between marshland-water interface and marsh disintegration 29(1985)245

Day Jr., J.W., see Sklar, F.H.

Dynamic spatial simulation modeling of coastal wetland habitat succession 29(1985) 261

Dayong, Z.

An index to measure the strength of relationship between community and site 40(1988) 145

Dayong, Z.

A method of detecting departure from randomness in plant communities 46(1989)261

De Jong, D., see Halfon, E.

A computer program to display animations within the computer graphics halo environment 47(1989)153

De Jong, M.C.M. and Saarenmaa, H.

A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109

De Luna, J.T. and Hallam, T.G.

Effects of toxicants on populations: a qualitative approach IV. Resource-consumer-toxicant models 35(1987)249

DeAngelis, D.L., Waterhouse, J.C., Post, W.M. and O'Neill, R.V.

Ecological modelling and disturbance evaluation 29(1985)399

DeAngelis, D.L. and Huston, M.A.

Effects of growth rates in models of size distribution formation in plants and animals 36(1987)119

- DeAngelis, D.L., see Breck, J.E.
Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1
- DeAngelis, D.L.
Strategies and difficulties of applying models to aquatic populations and food webs 43 (1988)57
- DeAngelis, D.L., see O'Neill, R.V.
Multiple nutrient limitations in ecological models 46(1989)147
- Decker, D.G., see Montague, C.L.
Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177
- DeGrandi-Hoffman, G., Roth, S.A., Loper, G.L. and Erickson Jr., E.H.
BEEPOP: a honeybee population dynamics simulation model 45(1989)133
- Dejak, C., Mazzei Lalatta, I., Meregalli, L. and Peceník, G.
Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- Dejak, C., Mazzei Lalatta, I., Messina, E. and Peceník, G.
A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- Dejak, C., Mazzei Lalatta, I., Messina, E. and Peceník, G.
An advection-diffusion pollution model of the lagoon of Venice 37(1987)47
- Dejak, C., Mazzei Lalatta, I., Messina, E. and Peceník, G.
Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Dejak, C., Mazzei Lalatta, I., Molin, M. and Peceník, G.
Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987)81
- Dejak, C., see Bertonati, M.
Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103
- Deneubourg, J.L., see Focardi, S.
Theoretical analysis of rhythmical clustering in an intertidal gastropod 44(1988)177
- Detling, J.K., see Bachelet, D.
A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231
- Detling, J.K., see Bachelet, D.M.
Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83
- D'Itri, F.M., see Furlong, E.A.-N.
Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215
- Dos Santos, W.J., see Gutierrez, A.P.
A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231
- Dostálková, I., Kindlmann, P. and Rejmánek, M.
Simulation of species replacement on environmental gradient in the course of ecological succession 26(1984)45
- Douglas Oliver, J. and Legović, T.
Okefenokee marshland before, during and after nutrient enrichment by a bird rookery 43 (1988)195
- Doyle, T.W., see Dale, V.H.
A comparison of tree growth models 29(1985)145
- Düchting, W. and Vogelsaenger, T.
Methodological aspects of modelling tumor growth and treatment 32(1986)191
- Duffy, D.C. and Wissel, C.
Models of fish school size in relation to environmental productivity 40(1988)201

Durand, B., see Katerji, N.

Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185

E

Eckersten, H., see Kowalik, P.J.

Water transfer from soil through plants to the atmosphere in willow energy forest 26(1984)251

Egea, L., see Iriberry, J.

Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113

Eilers, P.H.C. and Peeters, J.C.H.

A model for the relationship between light intensity and the rate of photosynthesis in phytoplankton 42(1988)199

Emanuel, W.R. see Mulholland, R.J.

Asymptotic analysis of airborne fraction used to validate global carbon models 36(1987)139

Emlen, J.M. and Pikitch, E.K.

Animal population dynamics: identification of critical components 44(1988)253

Engstrom, D.G., see Wolfe, J.R.

A computer simulation model of the solar-algae pond ecosystem 34(1986)1

Eraslan, A.H., see Kalmaz, E.E.

A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29(1985)315

Erickson Jr., E.H., see DeGrandi-Hoffman, G.

BEEPOP: a honeybee population dynamics simulation model 45(1989)133

Esser, G.

Global land-use changes from 1860 to 1980 and future projections to 2500 44(1988)307

Esser, G., see Kohlmaier, E.

Letter to the Editor 50(1990)221

Eston, V.R., Galves, A., Jacobi, C.M., Langevin, R. and Tanaka, N.I.

Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

Ewel, K.C., see Cropper Jr., W.P.

A regional carbon storage simulation for large-scale biomass plantations 36(1987)171

Ewel, K.C.

Learning to simulate ecological models on a microcomputer 47(1989)7

F

Fahrig, L., see Lefkovich, L.P.

Spatial characteristics of habitat patches and population survival 30(1985)297

Fahrig, L.

Nature of ecological theories 43(1988)129

Fairall, N., Vermeulen, P.J. and Van Der Merwe, M.

A general model of population growth in the hyrax *Procavia capensis* 34(1986)115

Farm, B.P., see Starfield, A.M.

A rule-based ecological model for the management of an estuarine lake 46(1989)107

Favretto, D. and Poldini, L.

Extinction time of a sample of Karst pastures due to bush encroachment 33(1986)85

Fengyong, L., see Qiwu, C.

A mathematical model of predation based upon the theory of nutrition kinetics 28(1985)155

Fengyong, L., see Qiwu, C.

A mathematical model of predation based upon the theory of nutrition kinetics. 2. A nutrition structure of the predator population and its functional response to the prey 40(1988)67

Ferson, S., Ginzburg, L. and Silvers, A.

Extreme event risk analysis for age-structured populations 47(1989)175

- Fields, D.E. and Miller, C.W.
A methodology for deriving model input parameters from a set of environmental data 40 (1988)155
- Finn, J.T., see Wilkie, D.S.
A spatial model of land use and forest regeneration in the Ituri forest of northeastern Zaire 41(1988)307
- Fitz-Earle, M. and Barclay, H.J.
Is there an optimal sex ratio for insect mass rearing? 45(1989)205
- Flagler, R.B., see King, D.A.
Evaluation of an ozone \times moisture stress interaction model for soybean 41(1988)269
- Fleishman, B.S.
Contribution to the theory of adaptation with application to ecology 26(1984)21
- Fleishman, B.S.
Stochastic theory of community control 39 (1987)121
- Fletcher, B.S., see Comins, H.N.
Simulation of fruit fly population dynamics, with particular reference to the olive fruit fly, *Dacus oleae* 40(1988)213
- Focardi, S., Deneubourg, J.L. and Chelazzi, G.
Theoretical analysis of rhythmical clustering in an intertidal gastropod 44(1988)177
- Folse, L.J., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44 (1988)125
- Folse, L.J., Packard, J.M. and Grant, W.E.
AI modelling of animal movements in a heterogeneous habitat 46(1989)57
- Forrester, D.R., see North, P.M.
A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233
- Fraser, A.S., see Lam, D.C.L.
Watershed acidification models using the knowledge-based systems approach 47(1989) 131
- Freedman, H.I., see Shukla, J.B.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219
- French, D., see Reed, M.
Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213
- French, D.P., Reed, M., Calambokidis, J. and Cubbage, J.C.
A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193
- French, D.P., see Reed, M.
Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49
- French, N.R., see Grant, W.E.
Response of alpine tundra to a changing climate: a hierarchical simulation model 49 (1989)205
- Frisman, E.Ja., see Shapiro, A.P.
Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41
- Frisman, E.Ya., see Ashikhmina, E.V.
Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145
- Fujii, S., Somiya, I., Tsuno, H. and Fujiwara, M.
Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43
- Fujiwara, M., see Fujii, S.
Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43
- Fukuoka, J., see Ohuchi, A.
Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149
- Fukushima, T., see Muraoka, K.
On the box model for prediction of water-quality in eutrophic lakes 31(1986)221
- Fulda, J.S.
The logistic equation and double jeopardy 36 (1987)315

Furlong, E.A.-N. and D'Itri, F.M.

Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215

Futagami, T., see Suga, Y.

A microcomputer system for remotely sensed image data on ecological environments 32(1986)15

G

Galitsky, V.V.

Dynamic 2-D model of plant communities 50(1990)95

Gal'perin, M.V.

Principles of computer-aided event simulation in marine ecology 39(1987)101

Galves, A., see Eston, V.R.

Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

Gard, T.C.

Aggregation in stochastic ecosystem models 44(1988)153

Gardner, R.H., see Jager, H.I.

A simulation experiment to investigate food web polarization 41(1988)101

Gardner, R.H., see Bartell, S.M.

Aggregation error: research objectives and relevant model structure 41(1988)157

Gardner, R.H., see Dale, V.H.

Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165

Garnerin, Ph., Hazout, S. and Valleron, A.-J.

Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986)123

Gatto, M., Muratori, S. and Rinaldi, S.

A functional interpretation of the logistic equation 42(1988)155

Gatto, M. and Guariso, G.

A report on some recent experiences in developing environmental software 47(1989)19

Gentil, S., see Blake, G.

Ecological modelling of a high mountain reservoir in relation to particulate organic matter loading 35(1987)227

Gerritsen, J. and Patten, B.C.

System theory formulation of ecological disturbance 29(1985)383

Giavelli, G., Rossi, O. and Siri, E.

Stability of natural communities: loop analysis and computer simulation approach 40(1988)131

Ginzburg, L., see Ferson, S.

Extreme event risk analysis for age-structured populations 47(1989)175

Glasser, J.W.

Interference (and facilitation) among species that exploit alternative resources 40(1988)111

Goda, T., Naito, M., Ikeda, S. and Watanabe, M.

Preface 31(1986)

Goda, T. and Matsuoka, Y.

Synthesis and analysis of a comprehensive lake model - with the evaluation of diversity of ecosystems 31(1986)11

Goda, T., see Matsuoka, Y.

An eutrophication model of Lake Kasumigaura 31(1986)201

Goda, T., see Jørgensen, S.E.

Scope and limit in the application of ecological models to environmental management - I-VI 32(1986)237

Goffinet, B., see Wallach, D.

Mean squared error of prediction as a criterion for evaluating and comparing system models 44(1988)299

Gold, H.J., see Shaffer, P.L.

A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30(1985)247

- Gold, H.J., Kendall, W.L. and Shaffer, P.L.
Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139
- Goodland, R. and Ledec, G.
Neoclassical economics and principles of sustainable development 38(1987)19
- Gorban, G.R. and Bosatta, E.
Cation depletion rate as a measure of soil sensitivity to acidic deposition: theory 40 (1988)25
- Gorban, G.R. and Ågren, G.I.
Significance of changes in K_e values for Ca-Al exchange and its effects on soil and water acidification predictions 44(1988)165
- Goyer, R.A., see Rejmánek, M.
Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- Grant, W.E., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169
- Grant, W.E., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191
- Grant, W.E., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73
- Grant, W.E., see Rykiel Jr., E.J.
Foreword 29(1985)3
- Grant, W.E., see Krauthamer, J.T.
A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275
- Grant, W.E. and Hoogendyk, C.G.
Foreword 36(1987)3
- Grant, W.E., see Carothers, P.E.
Fishery management implications of recruitment seasonality: simulation of the Texas fishery for the brown shrimp, *Penaeus aztecus* 36(1987)239
- Grant, W.E., see Rykiel Jr., E.J.
Foreword 43(1988)1
- Grant, W.E., Matis, J.H. and Miller, W.
Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988)183
- Grant, W.E., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44 (1988)125
- Grant, W.E., see Folse, L.J.
AI modelling of animal movements in a heterogeneous habitat 46(1989)57
- Grant, W.E. and French, N.R.
Response of alpine tundra to a changing climate: a hierarchical simulation model 49 (1989)205
- Graser, D.J., see Kot, M.
Changing criteria for imposing order 43 (1988)75
- Greve, W., see Reichelt, R.E.
Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153
- Griffin, W.L., see Krauthamer, J.T.
A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275
- Grobler, D.C.
Assessment of the impact of eutrophication control measures on South African impoundments 31(1986)237
- Gromiec, M.J., see Kawasaki, S.
Effect of seawater on nitrification by attached biofilm 32(1986)183
- Grossman, W.D. and Schalles, J.
Geographical maps on forest die-off, driven by dynamic models 31(1986)341
- Grossmann, W.-D.
Products of photo-oxidation as a decisive factor of the new forest decline? - results and considerations 41(1988)281

Guariso, G., see Gatto, M.

A report on some recent experiences in developing environmental software 47(1989)19

Guiot, J.

ARMA techniques for modelling tree-ring response to climate and for reconstructing variations of paleoclimates 33(1986)149

Gurtowski, M., see Plichta, W.

A general analytical model of the process of humus mineralization and accumulation in soil 44(1988)209

Gutierrez, A.P., Pizzamiglio, M.A., Dos Santos, W.J., Tennyson, R. and Villacorta, A.M.

A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231

H

Hakamata, T., Hiroaki, S., Sekine, Y., Suzuki, Y. and Kato, S.

Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71

Halfon, E.

Is there a best model structure? III. Testing the goodness of fit 27(1985)15

Halfon, E.

Modelling the fate of Mirex and Lindane in Lake Ontario, off the Niagara River mouth 33(1986)13

Halfon, E.

Probabilistic validation of computer simulations using the bootstrap 46(1989)213

Halfon, E.

Microcomputers in ecological modelling: A special issue dedicated to research, education and computer graphics 47(1989)3

Halfon, E. and De Jong, D.

A computer program to display animations within the computer graphics halo environment 47(1989)153

Halfon, E., Hodson, J.-A. and Miles, K.

An algorithm to plot hasse diagrams on microcomputers and calcomp plotters 47(1989)189

Hall, C.A.S.

An assessment of several of the historically most influential theoretical models used in ecology and of the data provided in their support 43(1988)5

Hall, C.A.S.

What constitutes a good model and by whose criteria? 43(1988)125

Hallaire, M., see Katerji, N.

Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185

Hallam, T.G., see De Luna, J.T.

Effects of toxicants on populations: a qualitative approach IV. Resource-consumer-toxicant models 35(1987)249

Hammer, D.E., see Kadlec, R.H.

Modeling nutrient behavior in wetlands 40(1988)37

Hanaki, K., see Kawasaki, S.

Effect of seawater on nitrification by attached biofilm 32(1986)183

Hanson, J.D., see MacNeil, M.D.

Sensitivity analysis of a general rangeland model 29(1985)57

Hanson, J.D., Parton, W.J. and Innis, G.S.

Plant growth and production of grassland ecosystems: a comparison of modelling approaches 29(1985)131

Hanson, J.D., Skiles, J.W. and Parton, W.J.

A multi-species model for rangeland plant communities 44(1988)89

Hanson, J.S., Malanson, G.P. and Armstrong, M.P.

Landscape fragmentation and dispersal in a model of riparian forest dynamics 49(1989)277

Harashima, A., see Watanabe, M.

Interaction between motile phytoplankton and Langmuir circulation 31(1986)175

Hargrave, B.T.

Particle sedimentation in the ocean 30(1985)229

- Hari, P., see Mäkelä, A.
Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205
- Hari, P., see Sievänen, R.
A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55
- Harmsen, R., see Woolhouse, M.E.J.
A transition matrix model of seasonal changes in mite populations 37(1987)167
- Harmsen, R., see Woolhouse, M.E.J.
A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- Harmsen, R., see Woolhouse, M.E.J.
A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269
- Hart, B.T., Ottaway, E.M. and Noller, B.N.
Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986)249
- Hathhorn, W.E., see Tung, Y.-K.
Probability distribution for critical DO location in streams 42(1988)45
- Hathhorn, W.E., see Tung, Y.-K.
Determination of the critical locations in a stochastic stream environment 45(1989)43
- Hatton, T.J., see Catchpole, E.A.
Fire spread through nonhomogeneous fuel modelled as Markov process 48(1989)101
- Haynes, D.L., see Sawyer, A.J.
Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30(1985)83
- Haynes, D.L., see Sawyer, A.J.
Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89
- Haynes, D.L., see Carruthers, R.I.
A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- Hazout, S., see Garnerin, Ph.
Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986)123
- Heagle, A.S., see King, D.A.
Evaluation of an ozone \times moisture stress interaction model for soybean 41(1988)269
- Hearne, J.W. and Howard-Williams, C.
Modelling nitrate removal by riparian vegetation in a springfed stream: the influence of land-use practices 42(1988)179
- Helton, J.C., Iman, R.L. and Brown, J.B.
Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides 28(1985)243
- Henderson-Sellers, B. and Allen, S.E.
Verification of the plume rise/dispersion model USPR: plume rise for single stack emissions 30(1985)209
- Henderson-Sellers, B.
Plume rise modelling: the effects of including a wind shear and a variable surface roughness 37(1987)269
- Herendeen, R.
Energy intensity, residence time, exergy, and ascendancy in dynamic ecosystems 48(1989)19
- Herendeen, R.A.
Network trophic dynamics 42(1988)75
- Herendeen, R.A.
Role of models in ecology 43(1988)133
- Hernández, M.J., see Rabinovich, J.E.
A simulation model for the management of vicuña populations 30(1985)275
- Herodek, T. Kutas an S.
Effects of load reductions on the water quality of a large shallow lake 39(1987)85
- Higashi, M. and Patten, B.C.
Further aspects of the analysis of indirect effects in ecosystems 31(1986)69
- Higashi, M.
Extended input-output flow analysis of ecosystems 32(1986)137
- Higashi, M.
Residence time in constant compartmental ecosystems 32(1986)243

- Hirata, H.
Equivalence between input-output analysis and environ analysis as concerns flow partitions 30(1985)3
- Hirata, H. and Ulanowicz, R.E.
Large-scale system perspectives on ecological modelling and analysis 31(1986)79
- Hiratsuka, S., see Nishida, N.
An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85
- Hirosaki, S., see Hakamata, T.
Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71
- Hoare, J.R.L., see Davis, J.R.
Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73
- Hodson, J.-A., see Halfon, E.
An algorithm to plot hasse diagrams on microcomputers and calcomp plotters 47(1989)189
- Holler, N.R., see Montague, C.L.
Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177
- Hoogendyk, C.G., see Grant, W.E.
Foreword 36(1987)3
- Houghton, R.A., see Morris, J.T.
Theoretical limits of belowground production by *Spartina alterniflora*: an analysis through modelling 26(1984)155
- Howard-Williams, C., see Hearne, J.W.
Modelling nitrate removal by riparian vegetation in a springfed stream: the influence of land-use practices 42(1988)179
- Huang, M.-C., see Huang, S.-L.
Applied carrying capacity concept for integrating stormwater management and land use planning, a case study: the Kuantu Plain of Taipei, Taiwan 33(1986)35
- Huang, S.-L. and Huang, M.-C.
Applied carrying capacity concept for integrating stormwater management and land use planning, a case study: the Kuantu Plain of Taipei, Taiwan 33(1986)35
- Hudler, G.W., see Knudsen, G.R.
Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45
- Hueting, R.
An economic scenario that gives top priority to saving the environment 38(1987)123
- Hughes, G. and McKinlay, R.G.
Spatial heterogeneity in yield-pest relationships for crop loss assessment 41(1988)67
- Huillet, T. and Lauga, J.
A soil-plant-water model with a case study in a forested catchment 27(1985)235
- Hulburt, E.M.
Use of logical equivalence in modeling ecological relations of oceanic phytoplankton 27(1985)25
- Hulburt, E.M.
Equivalence and its use 45(1989)1
- Hunt, H.W., see Lauenroth, W.K.
Estimating aboveground net primary production in grasslands: a simulation approach 33(1986)297
- Hunt, H.W., see Bachelet, D.
A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231
- Hunt, H.W., see Bachelet, D.M.
Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83
- Huston, M.A., see DeAngelis, D.L.
Effects of growth rates in models of size distribution formation in plants and animals 36(1987)119

I

- Ichikawa, A. and Amano, K.
Modeling for estimating representative water conditions in a river basin 32(1986)199

- Ikeda, S., see Goda, T.
Preface 31(1986)
- Ikeda, S., see Kishi, M.
Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145
- Iman, R.L., see Helton, J.C.
Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides 28(1985)243
- Innis, G.S., see Rexstad, E.
Model simplification - three applications 27(1985)1
- Innis, G.S., see Hanson, J.D.
Plant growth and production of grassland ecosystems: a comparison of modelling approaches 29(1985)131
- Iriberry, J., Undurraga, A., Muela, A. and Egea, L.
Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113
- Ishida, T., see Tamura, H.
Environmental-economic models for total emission control of regional environmental pollution - input-output approach 30(1985)163
- Iwasa, Y., see Takada, T.
Size distribution dynamics of plants with interaction by shading 33(1986)173
- Iwasa, Y., Andreassen, V. and Levin, S.
Aggregation in model ecosystems. 1. Perfect aggregation 37(1987)287
- J
- Jackson, B.J., see O'Neill, R.V.
Multiple nutrient limitations in ecological models 46(1989)147
- Jackson, D.H., see Reinhardt, E.
An advisory expert system for designing fire prescriptions 46(1989)121
- Jacobi, C.M., see Eston, V.R.
Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99
- Jager, H.I. and Gardner, R.H.
A simulation experiment to investigate food web polarization 41(1988)101
- Jager, H.I., see Dale, V.H.
Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165
- Jakeman, A.J., see Taylor, J.A.
A hybrid model for predicting the distribution of sulphur dioxide concentrations observed near elevated point sources 36(1987)269
- Jameson, D.A. and Bartlett, E.T.
Selection of optimal management strategies based on stochastic dynamic ecological models 36(1987)5
- Jameson, D.A., see Rodriguez, A.
Rainfall risk in grazing management 41(1988)85
- Janecek, A., Benderoth, G., Lüdeke, M.K.B., Kindermann, J. and Kohlmaier, G.H.
Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Jarvis, A.C., see Cochrane, K.L.
An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207
- Jayko, K., see Reed, M.
Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213
- Jayko, K., see Reed, M.
Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988)1
- Jensen, A.L.
Contaminant uptake by fish and the potential for transfer to humans modelled over time 32(1986)281

- Jensen, A.L.
Simple models for exploitative and interference competition 35(1987)113
- Jensen, A.L.
Simulation of the potential for life history components to regulate walleye population size 45(1989)27
- Jo, N., see Ogawa, K.
Modelling of industrial ecological systems for evaluation of health services 31(1986)329
- Johnson, D.H., Conroy, M.J. and Nichols, J.D.
The need for accuracy in modelling: an example 30(1985)157
- Johnson, D.H., Sparling, D.W. and Cowardin, L.M.
A model of the productivity of the mallard duck 38(1987)257
- Johnson, D.L., see Schaalje, G.B.
Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233
- Jones, J.W., see Bernardi, M.
RAGHUA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Pennisetum americanum* and *P. typhoides* phenology 44(1988)275
- Jørgensen, L.A., see Jørgensen, S.E.
Examination of the generality of eutrophication models 32(1986)251
- Jørgensen, S.E.
Structural dynamic model 31(1986)1
- Jørgensen, S.E., Kamp-Nielsen, L., Christensen, T., Windolf-Nielsen, J. and Westergaard, B.
Validation of a prognosis based upon a eutrophication model 32(1986)165
- Jørgensen, S.E. and Goda, T.
Scope and limit in the application of ecological models to environmental management - 1-V1 32(1986)237
- Jørgensen, S.E., Kamp-Nielsen, L. and Jørgensen, L.A.
Examination of the generality of eutrophication models 32(1986)251
- Jørgensen, S.E.
Use of models as experimental tool to show that structural changes are accompanied by increased exergy 41(1988)117
- Jørgensen, S.E.
About your journal: Ecological modelling 50(1990)1
- Joshi, S.R., see Bobba, A.G.
Application of an inverse approach to a Canadian radioactive waste disposal site 46(1989)195
- Joyeux, R.
Fur trade in Canada: an econometric analysis 27(1985)139
- ## K
- Kachi, N., Yasuoka, Y., Totsuka, T. and Suzuki, K.
A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105
- Kadlec, R.H. and Hammer, D.E.
Modeling nutrient behavior in wetlands 40(1988)37
- Kalmaz, E.E., Eraslan, A.H. and Kim, K.H.
A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29(1985)315
- Kaluzny, S. and Swartzman, G.
Simulation experiments comparing alternative process formulations using a factorial design 28(1985)181
- Kämäri, J., see Kauppi, P.
Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231
- Kamp-Nielsen, L., see Jørgensen, S.E.
Validation of a prognosis based upon a eutrophication model 32(1986)165

- Kamp-Nielsen, L., see Jørgensen, S.E.
Examination of the generality of eutrophication models 32(1986)251
- Kangas, P.
Deforestation and diversity of life zones in the Brazilian Amazon: a map analysis 49 (1989)267
- Karlson, R.H.
Competitive overgrowth interactions among sessile colonial invertebrates: a comparison of stochastic and phenotypic variation 27(1985) 299
- Kasprzak, P., see Koschel, R.
Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97
- Katerji, N., Hallaire, M., Menoux-Boyer, Y. and Durand, B.
Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185
- Katerji, N.
Use of simulation methods for determining critical leaf water potential for stomatal closure in field conditions 50(1990)133
- Kato, S., see Hakamata, T.
Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71
- Katsuya, A., see Oi, K.
Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29
- Kaufmann, R.
Biophysical and Marxist economics: Learning from each other 38(1987)91
- Kauppi, L., see Kauppi, P.
Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231
- Kauppi, P., Kämäri, J., Posch, M., Kauppi, L. and Matzner, E.
Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231
- Kawai, Y., see Nakanishi, H.
Study on the modelling of the behavior of phosphorus released from sediments 31(1986) 105
- Kawamoto, H., Woods, S.M., Sinha, R.N. and Muir, W.E.
A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137
- Kawanishi, H.
Numerical analysis of forest temperature. I. Diurnal variations 33(1986)315
- Kawanishi, H.
Numerical analysis of forest temperature. II. Seasonal variations 33(1986)329
- Kawasaki, S., Gromiec, M.J., Hanaki, K. and Matsumoto, J.
Effect of seawater on nitrification by attached biofilm 32(1986)183
- Kazarinoff, N.D., see Antonelli, P.I.
Modelling density-dependent aggregation and reproduction in certain terrestrial and marine ecosystems: a comparative study 41 (1988)219
- Keller, M.A., see Byrne, S.V.
Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63
- Kendall, W.L., see Gold, H.J.
Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139
- Khanbilvardi, R.M. and Rogowski, A.S.
Modeling soil erosion, transport and deposition 33(1986)255
- Kim, K.H., see Kalmaz, E.E.
A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29 (1985)315
- Kindermann, J., see Janecek, A.
Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Kindig, A.C., see Rose, K.A.
Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988) 1

- Kindlmann, P., see Dostálková, I.
Simulation of species replacement on environmental gradient in the course of ecological succession 26(1984)45
- Kindlmann, P., see Lepš, J.
Models of the development of spatial pattern of an even-aged plant population over time 39(1987)45
- King, D.A.
A model for predicting the influence of moisture stress on crop losses caused by ozone 35(1987)29
- King, D.A., Heagle, A.S. and Flagler, R.B.
Evaluation of an ozone \times moisture stress interaction model for soybean 41(1988)269
- Kirchner, T.B.
TIME-ZERO: the integrated modeling environment 47(1989)33
- Kishi, M. and Ikeda, S.
Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145
- Kitchens, W., see Pearlstine, L.
Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985)283
- Klepper, O. and van de Kamer, J.P.G.
A definition of the consistency of the carbon budget of an ecosystem, and its application to the Oosterschelde estuary, S.W. Netherlands 42(1988)217
- Kmeř, T. and Straškraba, M.
Global behaviour of a generalized aquatic ecosystem model 45(1989)95
- Kmeř, T. and Tóth, D.
Verification of the mathematical model of nitrogen circulation with and without light access 46(1989)135
- Knijnenburg, A., Matthäus, E. and Wenzel, V.
Concept and usage of the interactive simulation system for ecosystems SONCHES 26(1984)51
- Knudsen, G.R. and Hudler, G.W.
Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45
- Kohlmaier, E. and Esser, G.
Letter to the Editor 50(1990)221
- Kohlmaier, G.H., see Janecek, A.
Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Koponen, J., see Virtanen, M.
Three-dimensional water-quality-transport model compared with field observations 31(1986)185
- Kornilovsky, A.N., see Alekseev, V.V.
Ecosystems stochasticity model 28(1985)217
- Koschel, R. and Kasprzak, P.
Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97
- Koschel, R., Benndorf, J., Proft, G. and Recknagel, F.
Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59
- Kot, M., Schaffer, W.M., Truty, G.L., Graser, D.J. and Olsen, L.F.
Changing criteria for imposing order 43(1988)75
- Kowalik, P.J. and Eckersten, H.
Water transfer from soil through plants to the atmosphere in willow energy forest 26(1984)251
- Kozerski, H.-P., Schellenberger, G., Behrendt, H. and Mohaupt, V.
Testing of a complex ecological model for shallow water bodies 26(1984)103
- Kozerski, H.P., Behrendt, H., Schellenberger, G. and Mohaupt, V.
Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193
- Krapivin, V.F. and Vilkova, L.P.
Model estimation of excess CO₂ distribution in biosphere structure 50(1990)57

- Krauthamer, J.T., Grant, W.E. and Griffin, W.L.
A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275
- Kreikenbohm, R. and Bohl, E.
Bistability in the chemostat 43(1988)287
- Křivan, V. and Seďa, J.
Application of a guaranteed regression model to trophic interaction in an aquatic system 49 (1989)1
- Krysanova, V., Meiner, A., Roosaare, J. and Vasilyev, A.
Simulation modelling of the coastal waters pollution from agricultural watershed 49 (1989)7
- Kulikov, A.N., see Ashikhmina, E.V.
Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145
- Kunikane, S., see Magara, Y.
Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303
- Kutas, T., see Bolla, M.
Submodels for the nutrient loading estimation on river Zala 26(1984)115
- Kuuluvainen, T., see Oker-Blom, P.
Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73
- Kuuluvainen, T. and Pukkala, T.
Simulation of within-tree and between-tree shading of direct radiation in a forest canopy: effect of crown shape and sun elevation 49 (1989)89
- L**
- Lafrance, P., see Padilla, F.
Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73
- Laitner, S.
Resource constraints: the need for community management in economic development strategies 38(1987)159
- Lam, D.C.L., Swayne, D.A., Storey, J. and Fraser, A.S.
Watershed acidification models using the knowledge-based systems approach 47(1989) 131
- Lam, D.C.L., see Swayne, I. Wong and D.A.
Fast graphical simulations of spills and plumes for application to the great lakes 47 (1989)161
- Lam, D.C.L., see Bobba, A.G.
Hydrological modeling of acidified Canadian watersheds 50(1990)5
- Langevin, R., see Eston, V.R.
Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99
- Larsen, L.C. and Williams, W.A.
Fitting De Wit competition models with general nonlinear regression programs 41(1988) 147
- Lauenroth, W.K., Hunt, H.W., Swift, D.M. and Singh, J.S.
Estimating aboveground net primary production in grasslands: a simulation approach 33(1986)297
- Lauenroth, W.K., see Sala, O.E.
Bias in estimates of primary production: an analytical solution 44(1988)43
- Lauenroth, W.K., see Coffin, D.P.
A gap dynamics simulation model of succession in a semiarid grassland 49(1989)229
- Lauga, J., see Huillet, T.
A soil-plant-water model with a case study in a forested catchment 27(1985)235
- Law, Y.K., see Dabrowski, K.
Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195
- Leatherwood, S., see Reed, M.
Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988) 1

- Ledec, G., see Goodland, R.
Neoclassical economics and principles of sustainable development 38(1987)19
- Lefebvre, L.W., see Montague, C.L.
Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177
- Lefkovich, L.P. and Fahrig, L.
Spatial characteristics of habitat patches and population survival 30(1985)297
- Legendre, P., see Ouimet, C.
Practical aspects of modelling ecological phenomena using the cusp catastrophe 42(1988)265
- Legović, T.
A recent increase in jellyfish populations: a predator-prey model and its implications 38(1987)243
- Legović, T., see Douglas Oliver, J.
Okefenokee marshland before, during and after nutrient enrichment by a bird rookery 43(1988)195
- Legović, T.
Predation in food webs 48(1989)267
- Leiler, I.
Material circulation and growth - with special reference to pollution problems 31(1986)125
- Lepš, J. and Kindlmann, P.
Models of the development of spatial pattern of an even-aged plant population over time 39(1987)45
- Lettenmaier, D.P., see Yearsley, J.R.
Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201
- Levin, S., see Iwasa, Y.
Aggregation in model ecosystems. 1. Perfect aggregation 37(1987)287
- Levine, S.H.
A dynamic formulation for input-output modelling of exploited ecosystems 44(1988)143
- Lhotka, L. and Straškraba, M.
Combinatorial model of ecosystem dynamics 39(1987)181
- Li, B.-L., see Cheng, Z.-B.
Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191
- Li, Z.-G., see Liu, D.-S.
Study on rate model of microbial degradation of pesticides in soil 41(1988)75
- Liepmann, D. and Stephanopoulos, G.
Development and global sensitivity analysis of a closed ecosystem model 30(1985)13
- Lijklema, L., see Van Duin, E.H.S.
Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243
- Limburg, K.E.
Increasing complexity and energy flow in models of food webs 29(1985)5
- Linder, E., Patil, G.P. and Vaughan, D.S.
Application of event tree risk analysis to fisheries management 36(1987)15
- Liu, D.-S. and Zhang, S.-M.
Kinetic model for degradative processes of pesticides in soil 37(1987)131
- Liu, D.-S., Zhang, S.-M. and Li, Z.-G.
Study on rate model of microbial degradation of pesticides in soil 41(1988)75
- Liu, J.-g.
A theoretical model of the process of rainfall interception in forest canopy 42(1988)111
- Loehle, C.
Optimal stocking for semi-desert range: a catastrophe theory model 27(1985)285
- Loehle, C.
Errors of construction, evaluation, and inference: a classification of sources of error in ecological models 36(1987)297
- Loehle, C.
Applying artificial intelligence techniques to ecological modeling 38(1987)191
- Loehle, C.
Robust parameter estimation for nonlinear models 41(1988)41
- Loehle, C.
Catastrophe theory in ecology: a critical review and an example of the butterfly catastrophe 49(1989)125

- Loehr, J.
Impact of the hydrodynamic conditions on the primary production in an impounded river 39(1987)227
- Logofet, D.O. and Svirezhev, Y.M.
Averaging and aggregation in ecological models: an attempt at a non-linear approach 34(1986)217
- Logofet, D.O., see Csetenyi, A.I.
Leslie model revisited: some generalizations to block structures 48(1989)277
- Loman, J.
Influence of territoriality on the stability and coexistence of competing predators - a simulation study 27(1985)95
- Loman, J.
Use of overlap indices as competition coefficients: tests with field data 34(1986)231
- Loman, J.
Alternative prey that decreases vole population cyclicity: a simulation study based on field data 40(1988)265
- Loneragan, S.C.
Theory and measurement of unequal exchange: a comparison between a Marxist approach and an energy theory of value 41(1988)127
- Longstaff, B.C.
Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303
- Loper, G.L., see DeGrandi-Hoffman, G.
BEEPOP: a honeybee population dynamics simulation model 45(1989)133
- Lopes, T.C., see Câmara, A.S.
An economic-ecological model for regional land-use planning 31(1986)293
- Lorber, M.N., see Carsel, R.F.
The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49
- Lorda, E. and Salla, S.B.
A statistical technique for analysis of environmental data containing periodic variance components 32(1986)59
- Luckyanov, N.K.
Iterative approximation of trophic functions 40(1988)1
- Lüdeke, M.K.B., see Janecek, A.
Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101

M

- Maas, S.J.
Use of remotely-sensed information in agricultural crop growth models 41(1988)247
- Mack, T.P., Smith Jr., J.W. and Reed, R.B.
A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269
- Mackay, D., see Paterson, S.
A model illustrating the environmental fate, exposure and human uptake of persistent organic chemicals 47(1989)85
- MacNeil, M.D., Skiles, J.W. and Hanson, J.D.
Sensitivity analysis of a general rangeland model 29(1985)57
- Magara, Y. and Kunikane, S.
Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303
- Mahamah, D.S.
Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103
- Mäkelä, A. and Hari, P.
Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205
- Makela, M.E., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125
- Malafant, K.W.J., see Wu, H.
Simulation of two-dimensional point patterns: application of a lattice framework approach 38(1987)299

- Malanson, G.P.
Simulation of competition between alternative shrub life history strategies through recurrent fires 27(1985)271
- Malanson, G.P., see Hanson, J.S.
Landscape fragmentation and dispersal in a model of riparian forest dynamics 49(1989)277
- Mano, A.P., see Câmara, A.S.
An economic-ecological model for regional land-use planning 31(1986)293
- Marani, A., see Zingales, F.
A conceptual model of unit-mass response function for nonpoint source pollutant runoff 26(1984)285
- Marani, A., see Rinaldo, A.
A study on solute $\text{NO}_3\text{-N}$ transport in the hydrologic response by an MRF model 48(1989)159
- Marengo, G., see Rossi, G.
Correlation of a lake eutrophication model to field experiments 34(1986)167
- Martens, B.
Connectance in linear and Volterra systems 35(1987)157
- Matis, J.H., see Grant, W.E.
Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988)183
- Matsumoto, J., see Kawasaki, S.
Effect of seawater on nitrification by attached biofilm 32(1986)183
- Matsuoka, Y., see Goda, T.
Synthesis and analysis of a comprehensive lake model - with the evaluation of diversity of ecosystems 31(1986)11
- Matsuoka, Y., Goda, T. and Naito, M.
An eutrophication model of Lake Kasumigaura 31(1986)201
- Matthäus, E., see Knijnenburg, A.
Concept and usage of the interactive simulation system for ecosystems SONCHES 26(1984)51
- Matthies, M., Brüggemann, R., Münzer, B., Schernewski, G. and Trapp, S.
Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47(1989)115
- Matzner, E., see Kauppi, P.
Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231
- Mauersberger, P. and Straškraba, M.
Two approaches to generalized ecosystem modelling: thermodynamic and cybernetic 39(1987)161
- Maurer, B.A.
Dipodomys populations as energy-processing systems: regulation, competition, and hierarchical organization 50(1990)157
- Mazzei Lalatta, I., see Dejak, C.
Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- Mazzei Lalatta, I., see Dejak, C.
A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- Mazzei Lalatta, I., see Dejak, C.
An advection-diffusion pollution model of the lagoon of Venice 37(1987)47
- Mazzei Lalatta, I., see Dejak, C.
Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Mazzei Lalatta, I., see Dejak, C.
Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987)81
- Mazzei Lalatta, I., see Bertonati, M.
Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103
- McClanahan, T.R.
Seed dispersal from vegetation islands 32(1986)301

- McGrath, T.P., see Arp, P.A.
A parameter-based method for modelling biomass accumulations in forest stands: theory 36(1987)29
- McGrath, T.P., see Arp, P.A.
A parameter-based method for modelling biomass accumulations in forest stands: an application 36(1987)49
- McKay, R.J. and Bradley, J.S.
Erlangian models for capture-recapture data 40(1988)161
- McKellar, H., see Pearlstine, L.
Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985) 283
- McKellar Jr., H.N., see Childers, D.L.
A simulation of saltmarsh water column dynamics 36(1987)211
- McKinlay, R.G., see Hughes, G.
Spatial heterogeneity in yield-pest relationships for crop loss assessment 41(1988)67
- McLean, R.I., see Rose, K.A.
Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111
- McLellan, A.R. and Rowland, C.M.
A honeybee colony swarming model 33(1986) 137
- McLellan, A.R., see Rowland, C.M.
Seasonal changes of drone numbers in a colony of the honeybee, *Apis mellifera* 37 (1987)155
- McNaughton, S.J., see Coughenour, M.B.
Simulation study of East-African perennial graminoid responses to defoliation 26(1984) 177
- Mehandjiev, M.R.
Thermodynamics of accumulation processes applied to ecological modelling 26(1984)17
- Meiner, A., see Krysanova, V.
Simulation modelling of the coastal waters pollution from agricultural watershed 49 (1989)7
- Mendoza, G.A. and Siahaya, J.
Yield prediction models for *Pinus merkusii* plantations in Indonesia 36(1987)181
- Menoux-Boyer, Y., see Katerji, N.
Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185
- Meregalli, L., see Dejak, C.
Development of a mathematical eutrophication model of the lagoon of Venice 37(1987) 1
- Messina, E., see Dejak, C.
A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- Messina, E., see Dejak, C.
An advection-diffusion pollution model of the lagoon of Venice 37(1987)47
- Messina, E., see Dejak, C.
Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Meyer, M., see Bölter, M.
Structuring of ecological data sets by methods of correlation and cluster analysis 32 (1986)1
- Michaelides, S.C.
A simulation model of the fungus *Phytophthora infestans* (Mont) de Bary 28(1985)121
- Mikhailovsky, G.E.
The law of congruous attraction and the structure of zooplankton communities 34 (1986)83
- Miles, K., see Halfon, E.
An algorithm to plot hasse diagrams on microcomputers and calcomp plotters 47(1989) 189
- Miller, C.B., see Batchelder, H.P.
Life history and population dynamics of *Metridia pacifica*: results from simulation modelling 48(1989)113
- Miller, C.W., see Fields, D.E.
A methodology for deriving model input parameters from a set of environmental data 40 (1988)155
- Miller, R.J., see Mohn, R.K.
A ration-based model of a seaweed-sea urchin community 37(1987)249

- Miller, W., see Grant, W.E.
Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988) 183
- Mishoe, J.W., see Bernardi, M.
RAGHUA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Pennisetum americanum* and *P. typhoides* phenology 44(1988)275
- Misra, O.P., see Shukla, J.B.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219
- Miyakoshi, A., see Ohuchi, A.
Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149
- Miyamoto, S., see Oi, K.
Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29
- Miyanaga, Y.
Modelling of stratified flow and eutrophication in reservoirs 31(1986)133
- Mohaupt, V., see Kozerski, H.-P.
Testing of a complex ecological model for shallow water bodies 26(1984)103
- Mohaupt, V., see Kozerski, H.P.
Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193
- Mohn, R.K. and Miller, R.J.
A ration-based model of a seaweed-sea urchin community 37(1987)249
- Molin, M., see Dejak, C.
Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987) 81
- Montague, C.L., Lefebvre, L.W., Decker, D.G. and Holler, N.R.
Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177
- Moore, A.D.
On the maximum growth equation used in forest gap simulation models 45(1989)63
- Moran, P.J., see Reichelt, R.E.
Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153
- Morgan, P., see Steinhorst, R.K.
A stochastic-deterministic simulation model of shrub succession 29(1985)35
- Morioka, T. and Chikami, S.
Basin-wide ecological fate model for management of chemicals hazard 31(1986)267
- Morioka, T., see Sueishi, T.
Analysis and cartographical approach to the regional water utilization system in the Yodo River basin 31(1986)315
- Morris, J.T., Houghton, R.A. and Botkin, D.B.
Theoretical limits of belowground production by *Spartina alterniflora*: an analysis through modelling 26(1984)155
- Morrison, K.A., Thérien, N. and Coupal, B.
Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97
- Muela, A., see Iriberry, J.
Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985) 113
- Muetzelfeldt, R., Robertson, D., Bundy, A. and Uschold, M.
The use of prolog for improving the rigour and accessibility of ecological modelling 46 (1989)9
- Muir, W.E., see Kawamoto, H.
A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137
- Mulholland, R.J., Read, J.S. and Emanuel, W.R.
Asymptotic analysis of airborne fraction used to validate global carbon models 36(1987) 139
- Mulkey, L.A., see Carsel, R.F.
The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49

Münzer, B., see Matthies, M.

Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47 (1989)115

Muraoka, K. and Fukushima, T.

On the box model for prediction of water-quality in eutrophic lakes 31(1986)221

Muratori, S., see Gatto, M.

A functional interpretation of the logistic equation 42(1988)155

Murtaugh, P.A.

Use of logistic regression in modelling prey selection by *Neomysis mercedis* 43(1988)225

Murthy, C.R., see Swayne, I. Wong and D.A.

Fast graphical simulations of spills and plumes for application to the great lakes 47 (1989)161

N

Naito, M., see Goda, T.

Preface 31(1986)

Naito, M., see Matsuoka, Y.

An eutrophication model of Lake Kasumigaura 31(1986)201

Nakanishi, H., Ukita, M. and Kawai, Y.

Study on the modelling of the behavior of phosphorus released from sediments 31(1986) 105

Nakayama, K., see Oi, K.

Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29

Nanninga, P.M., see Davis, J.R.

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

Nemchenko, O.

A compartmental model of metabolite utilization for plant growth 39(1987)17

Neuenschwander, L.F., see Steinhorst, R.K.

A stochastic-deterministic simulation model of shrub succession 29(1985)35

Nichols, J.D., see Johnson, D.H.

The need for accuracy in modelling: an example 30(1985)157

Nijkamp, P., see Brouwer, F.

A satellite design for integrated regional environmental modelling 35(1987)137

Nishida, N., Hiratsuka, S., Tanaka, T. and Okino, T.

An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85

Niven, B.S., see Abel, D.E.

Application of a formal specification language to animal ecology. I. Environment 50 (1990)205

Noller, B.N., see Hart, B.T.

Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986) 249

Norgaard, R.B.

Economics as mechanics and the demise of biological diversity 38(1987)107

Noro, K., see Ogawa, K.

Modelling of industrial ecological systems for evaluation of health services 31(1986)329

North, P.M.

A computer modelling study of the population dynamics of the Screech Owl (*Otus asio*) 30(1985)105

North, P.M., Boddy, A.W. and Forrester, D.R.

A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233

Nunes, J.F., see Câmara, A.S.

An economic-ecological model for regional land-use planning 31(1986)293

Nuttall, R.M.

Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 48 (1989)291

O

- Oderwald, R.G., see Somers, G.L.
Estimating and constructing confidence intervals for spatial patterns between random and regular 44(1988)57
- Ogawa, K., Sato, K., Jo, N., Noro, K. and Tsuchiya, K.
Modelling of industrial ecological systems for evaluation of health services 31(1986)329
- Ohuchi, A., Fukuoka, J., Miyakoshi, A. and Suzuki, M.
Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149
- Oi, K., Miyamoto, S., Abe, O., Katsuya, A. and Nakayama, K.
Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29
- Okada, M., see Takasaki, M.
A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283
- Okano, K., see Suga, Y.
A microcomputer system for remotely sensed image data on ecological environments 32(1986)15
- Oker-Blom, P., Pukkala, T. and Kuuluvainen, T.
Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73
- Okino, T., see Nishida, N.
An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85
- Okojie, J.A.
Stand development of mixtures of species with varying tolerances to shade 30(1985)71
- Olsen, L.F., see Kot, M.
Changing criteria for imposing order 43(1988)75
- Olson Jr., R.L., Sharpe, P.J.H. and Wu, H.-I.
Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171
- O'Neill, R.V., see DeAngelis, D.L.
Ecological modelling and disturbance evaluation 29(1985)399
- O'Neill, R.V., see Cale, W.G.
Aggregation and consistency problems in theoretical models of exploitative resource competition 40(1988)97
- O'Neill, R.V., see Bartell, S.M.
Aggregation error: research objectives and relevant model structure 41(1988)157
- O'Neill, R.V., DeAngelis, D.L., Pastor, J.J., Jackson, B.J. and Post, W.M.
Multiple nutrient limitations in ecological models 46(1989)147
- Onstad, D.W.
Population-dynamics theory: the roles of analytical, simulation, and supercomputer models 43(1988)111
- Orava, P.J., see Siev nen, R.
A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55
- Ostojski, M.S.
Mathematical model of sewage treatment plant operation 39(1987)67
- Ottaway, E.M., see Hart, B.T.
Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986)249
- Ouimet, C. and Legendre, P.
Practical aspects of modelling ecological phenomena using the cusp catastrophe 42(1988)265

P

- Packard, J.M., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125

- Packard, J.M., see Folse, L.J.
AI modelling of animal movements in a heterogeneous habitat 46(1989)57
- Padilla, F., Lafrance, P., Robert, C. and Vileneuve, J.-P.
Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73
- Pal, V.N., see Shukla, J.B.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44(1988)219
- Paloheimo, J.E.
Estimation of marine production from size spectrum 42(1988)33
- Papadopoulos, A.S., see Chen, K.-W.
A nonparametric method for estimating the joint probability density of BOD and DO 41(1988)183
- Park, S.S. and Uchirin, C.G.
A numerical mixing zone model for water quality assessment in natural streams: conceptual development 42(1988)233
- Parker, R.A.
Simulating the development of chlorophyll maxima in the celtic sea 33(1986)1
- Parton, W.J., see Hanson, J.D.
Plant growth and production of grassland ecosystems: a comparison of modelling approaches 29(1985)131
- Parton, W.J., see Hanson, J.D.
A multi-species model for rangeland plant communities 44(1988)89
- Pastor, J.J., see O'Neill, R.V.
Multiple nutrient limitations in ecological models 46(1989)147
- Paterson, S. and Mackay, D.
A model illustrating the environmental fate, exposure and human uptake of persistent organic chemicals 47(1989)85
- Patil, G.P., see Linder, E.
Application of event tree risk analysis to fisheries management 36(1987)15
- Paton, G.
A matrix modelling approach to population growth systems involving multiple time delays 34(1986)197
- Patten, B.C.
Energy cycling in the ecosystem 28(1985)1
- Patten, B.C., see Gerritsen, J.
System theory formulation of ecological disturbance 29(1985)383
- Patten, B.C., see Higashi, M.
Further aspects of the analysis of indirect effects in ecosystems 31(1986)69
- Patten, B.C.
Network trophic dynamics: reply to R.A. Herendeen 42(1988)78
- Paula Marques, M., see Câmara, A.S.
An economic-ecological model for regional land-use planning 31(1986)293
- Pearce, D.
Foundations of an ecological economics 38(1987)9
- Pearlstone, L., McKellar, H. and Kitchens, W.
Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985)283
- Pecenik, G., see Dejak, C.
Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- Pecenik, G., see Dejak, C.
A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- Pecenik, G., see Dejak, C.
An advection-diffusion pollution model of the lagoon of Venice 37(1987)47
- Pecenik, G., see Dejak, C.
Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Pecenik, G., see Dejak, C.
Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987)81
- Pecenik, G., see Bertonati, M.
Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103

- Peeters, J.C.H., see Eilers, P.H.C.
A model for the relationship between light intensity and the rate of photosynthesis in phytoplankton 42(1988)199
- Pelkonen, P., see Siev nen, R.
A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55
- Pendridge, L.K., see Wu, H.
Simulation of two-dimensional point patterns: application of a lattice framework approach 38(1987)299
- Penridge, L.K., see Sharpe, P.J.H.
A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189
- Penridge, L.K., see Wu, H.-I.
Ecological field theory: a spatial analysis of resource interference among plants 29(1985)215
- Phillips, J.D.
Stability of artificially-drained lowlands: a theoretical assessment 27(1985)69
- Phillips, J.D.
An evaluation of the state factor model of soil ecosystems 45(1989)165
- Pickup, G. and Chewings, V.H.
Random field modelling of spatial variations in erosion and deposition in flat alluvial landscapes in arid central Australia 33(1986)269
- Pikitch, E.K., see Emlen, J.M.
Animal population dynamics: identification of critical components 44(1988)253
- Pizzamiglio, M.A., see Gutierrez, A.P.
A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231
- Plichta, W. and Gurtowski, M.
A general analytical model of the process of humus mineralization and accumulation in soil 44(1988)209
- Pola, N.B.
Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327
- Poldini, L., see Favretto, D.
Extinction time of a sample of Karst pastures due to bush encroachment 33(1986)85
- Polgar, T.T., Turner, M.A. and Summers, J.K.
Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201
- Posch, M., see Kauppi, P.
Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231
- Post, W.M., see DeAngelis, D.L.
Ecological modelling and disturbance evaluation 29(1985)399
- Post, W.M., see O'Neill, R.V.
Multiple nutrient limitations in ecological models 46(1989)147
- Premazzi, G., see Rossi, G.
Correlation of a lake eutrophication model to field experiments 34(1986)167
- Press, A.J., see Davis, J.R.
Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73
- Proft, G., see Koschel, R.
Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59
- Pukkala, T., see Oker-Blom, P.
Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73
- Pukkala, T., see Kuuluvainen, T.
Simulation of within-tree and between-tree shading of direct radiation in a forest canopy: effect of crown shape and sun elevation 49(1989)89

Q

- Qiwu, C. and Fengyong, L.
A mathematical model of predation based upon the theory of nutrition kinetics 28(1985)155

Qiwu, C. and Fengyong, L.

A mathematical model of predation based upon the theory of nutrition kinetics. 2. A nutrition structure of the predator population and its functional response to the prey 40(1988)67

Que, T.-L., see Cheng, Z.-B.

Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191

R

Rabinovich, J.E., Hernández, M.J. and Cajal, J.L.

A simulation model for the management of vicuña populations 30(1985)275

Racsko, P.

Stability and instability of an adaptive resource replacement strategy in an agroecological production system 35(1987)165

Racsko, P. and Semenov, M.

Analysis of mathematical principles in crop growth simulation models 47(1989)291

Rand, R.H., see Upadhyaya, S.K.

Role of stomatal oscillations on transpiration, assimilation and water-use efficiency of plants 41(1988)27

Rastetter, E.B.

Analysis of community interactions using linear transfer function models 36(1987)101

Read, J.S., see Mulholland, R.J.

Asymptotic analysis of airborne fraction used to validate global carbon models 36(1987)139

Recknagel, F.

A comprehensive sensitivity analysis for an ecological simulation model 26(1984)77

Recknagel, F.

Analysis of structural stability of aquatic ecosystems as an aid for ecosystem control 27(1985)221

Recknagel, F., see Koschel, R.

Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59

Reed, M., French, D. and Jayko, K.

Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213

Reed, M., Jayko, K., Bowles, A. and Leatherwood, S.

Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988)1

Reed, M., see French, D.P.

A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193

Reed, M., French, D.P., Calambokidis, J. and Cabbage, J.C.

Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49

Reed, R.B., see Mack, T.P.

A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269

Reeves, S.A. and Uscher, M.B.

Application of a diffusion model to the spread of an invasive species: the coypu in Great Britain 47(1989)217

Reichelt, R.E., Greve, W., Bradbury, R.H. and Moran, P.J.

Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153

Reinhardt, E., Wright, A.H. and Jackson, D.H.

An advisory expert system for designing fire prescriptions 46(1989)121

Rejmánek, M., see Dostálková, I.

Simulation of species replacement on environmental gradient in the course of ecological succession 26(1984)45

Rejmánek, M., Smith, J.D. and Goyer, R.A.

Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287

- Rexstad, E. and Innis, G.S.
Model simplification - three applications 27
(1985)1
- Reynolds, J.F. and Acock, B.
Predicting the response of plants to increasing carbon dioxide: a critique of plant growth models 29(1985)107
- Reynolds, J.F., see Byrne, S.V.
Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63
- Riley, M.J. and Stefan, H.G.
MINLAKE: a dynamic lake water quality simulation model 43(1988)155
- Rinaldi, S., see Gatto, M.
A functional interpretation of the logistic equation 42(1988)155
- Rinaldo, A., see Zingales, F.
A conceptual model of unit-mass response function for nonpoint source pollutant runoff 26(1984)285
- Rinaldo, A., Bellin, A. and Marani, A.
A study on solute $\text{NO}_3\text{-N}$ transport in the hydrologic response by an MRF model 48
(1989)159
- Ritchie, J.R.
An expert system for a rangeland simulation model 46(1989)91
- Robert, C., see Padilla, F.
Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73
- Roberts, D.W.
Analysis of forest succession with fuzzy graph theory 45(1989)261
- Robertson, D., see Muetzelfeldt, R.
The use of prolog for improving the rigour and accessibility of ecological modelling 46
(1989)9
- Rodriguez, A. and Jameson, D.A.
Rainfall risk in grazing management 41
(1988)85
- Rogowski, A.S., see Khanbilvardi, R.M.
Modeling soil erosion, transport and deposition 33(1986)255
- Rogowski, A.S. and Weinrich, B.E.
Modeling the effects of mining and erosion on biomass production 35(1987)85
- Roosaare, J., see Krysanova, V.
Simulation modelling of the coastal waters pollution from agricultural watershed 49
(1989)7
- Rose, K.A., Swartzman, G.L., Kindig, A.C. and Taub, F.B.
Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)
1
- Rose, K.A., McLean, R.I. and Summers, J.K.
Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111
- Rosen, A.E., see Dale, V.H.
Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165
- Rossi, G., Premazzi, G. and Marengo, G.
Correlation of a lake eutrophication model to field experiments 34(1986)167
- Rossi, O., see Giavelli, G.
Stability of natural communities: loop analysis and computer simulation approach 40
(1988)131
- Rossis, G.
Reductionism and related methodological problems in ecological modelling 34(1986)
289
- Roth, S.A., see DeGrandi-Hoffman, G.
BEEPOP: a honeybee population dynamics simulation model 45(1989)133
- Rouviere, C., see Sueishi, T.
Analysis and cartographical approach to the regional water utilization system in the Yodo River basin 31(1986)315
- Rowland, C.M., see McLellan, A.R.
A honeybee colony swarming model 33(1986)
137
- Rowland, C.M. and McLellan, A.R.
Seasonal changes of drone numbers in a colony of the honeybee, *Apis mellifera* 37
(1987)155

- Roy, A.B., see Sarkar, A.K.
 Role of herbivore attack pattern in growth of plant populations 45(1989)307
- Rundel, P.W., see Stohlgren, T.J.
 A population model for a long-lived, resprouting chaparral shrub: *Adenostoma fasciculatum* 34(1986)245
- Running, S.W. and Coughlan, J.C.
 A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- Rykiel Jr., E.J. and Grant, W.E.
 Foreword 29(1985)3
- Rykiel Jr., E.J., see Wu, H.
 A statistical physics approach to nearest neighbor distribution for individuals of finite size 36(1987)73
- Rykiel Jr., E.J.
 Artificial intelligence and expert systems in ecology and natural resource management 46(1989)3
- Rykiel Jr., E.J. and Grant, W.E.
 Foreword 43(1988)1
- S**
- Saarenmaa, H., see De Jong, M.C.M.
 A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109
- Saarenmaa, H., Stone, N.D., Folse, L.J., Packard, J.M., Grant, W.E., Makela, M.E. and Coulson, R.N.
 An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125
- Saha Ray, S. and Chaudhuri, K.S.
 Lotka-Volterra prey-predator model with harvesting and environmental perturbations 47(1989)283
- Saila, S.B., see Lorda, E.
 A statistical technique for analysis of environmental data containing periodic variance components 32(1986)59
- Sala, O.E., Biondini, M.E. and Lauenroth, W.K.
 Bias in estimates of primary production: an analytical solution 44(1988)43
- Sarkar, A.K. and Roy, A.B.
 Role of herbivore attack pattern in growth of plant populations 45(1989)307
- Sarkkula, J., see Virtanen, M.
 Three-dimensional water-quality-transport model compared with field observations 31(1986)185
- Sato, A., see Takasaki, M.
 A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283
- Sato, K., see Ogawa, K.
 Modelling of industrial ecological systems for evaluation of health services 31(1986)329
- Sawyer, A.J. and Haynes, D.L.
 Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30(1985)83
- Sawyer, A.J. and Haynes, D.L.
 Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89
- Schaalje, G.B., Stinner, R.L. and Johnson, D.L.
 Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233
- Schäfer, H., see Bossel, H.
 Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48(1989)221
- Schaffer, W.M., see Kot, M.
 Changing criteria for imposing order 43(1988)75
- Schalless, J., see Grossman, W.D.
 Geographical maps on forest die-off, driven by dynamic models 31(1986)341
- Schellenberger, G., see Kozerski, H.-P.
 Testing of a complex ecological model for shallow water bodies 26(1984)103

- Schellenberger, G., see Kozerski, H.P.
Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193
- Schernewski, G., see Matthies, M.
Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47 (1989)115
- Schmitt, T. and Wissel, C.
Interdependence of ecological risk and economic profit in the exploitation of renewable resources 28(1985)201
- Schut, H.E.
Models for the physiological effects of short O₃ exposures on plants 30(1985)175
- Sciandra, A.
Study and modelling of a simple planktonic system reconstituted in an experimental microcosm 34(1986)61
- Seda, J., see Krivan, V.
Application of a guaranteed regression model to trophic interaction in an aquatic system 49 (1989)1
- Sekine, Y., see Hakamata, T.
Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71
- Seligman, N.G. and van Keulen, H.
Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989) 303
- Semenov, M., see Racsco, P.
Analysis of mathematical principles in crop growth simulation models 47(1989)291
- Senft, R.L.
Hierarchical foraging models: effects of stocking and landscape composition on simulated resource use by cattle 46(1989)283
- Sengupta, U., see Conley, W.
A demographic simulator with deeply coupled semantic and numeric data structures 46(1989)35
- Seno, H.
Effect of a singular patch on population persistence in a multi-patch system 43(1988)271
- Seymour, R.M.
Is *Acanthaster planci* a near-optimal predator? 46(1989)239
- Shaffer, P.L. and Gold, H.J.
A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30 (1985)247
- Shaffer, P.L., see Gold, H.J.
Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139
- Shapiro, A.P., Frisman, E.Ja. and Skaletskaya, E.J.
Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41
- Sharpe, P.J.H., see Olson Jr., R.L.
Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171
- Sharpe, P.J.H., Walker, J., Penridge, L.K. and Wu, H.-I.
A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189
- Sharpe, P.J.H., see Wu, H.-I.
Ecological field theory: a spatial analysis of resource interference among plants 29(1985) 215
- Sharpe, P.J.H., see Wu, H.
A statistical physics approach to nearest neighbor distribution for individuals of finite size 36(1987)73
- Sharpe, P.J.H., see Wu, H.
Simulation of two-dimensional point patterns: application of a lattice framework approach 38(1987)299
- Sheppard, M.I. and Sheppard, S.C.
A soil solute transport model evaluated on two experimental systems 37(1987)191
- Sheppard, S.C., see Sheppard, M.I.
A soil solute transport model evaluated on two experimental systems 37(1987)191
- Shiyomi, M., Akiyama, T. and Takahashi, S.
Modelling of energy flows and conversion efficiencies in a grassland ecosystem 32(1986) 119

- Shugart, H.H., see Dale, V.H.
A comparison of tree growth models 29(1985) 145
- Shukla, A., see Shukla, J.B.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219
- Shukla, J.B., Freedman, H.I., Pal, V.N., Misra, O.P., Agarwal, M. and Shukla, A.
Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219
- Siahaya, J., see Mendoza, G.A.
Yield prediction models for *Pinus merkusii* plantations in Indonesia 36(1987)181
- Sievänen, R., Hari, P., Orava, P.J. and Pelkonen, P.
A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41 (1988)55
- Silvers, A., see Ferson, S.
Extreme event risk analysis for age-structured populations 47(1989)175
- Silvert, W.
Modelling for managers 47(1989)53
- Simpson, R.W., see Taylor, J.A.
A hybrid model for predicting the distribution of sulphur dioxide concentrations observed near elevated point sources 36(1987) 269
- Singh, J.S., see Lauenroth, W.K.
Estimating aboveground net primary production in grasslands: a simulation approach 33(1986)297
- Sinha, R.N., see Kawamoto, H.
A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137
- Siri, E., see Giavelli, G.
Stability of natural communities: loop analysis and computer simulation approach 40 (1988)131
- Skaletskaya, E.I., see Ashikhmina, E.V.
Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145
- Skaletskaya, E.J., see Shapiro, A.P.
Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41
- Skiles, J.W., see MacNeil, M.D.
Sensitivity analysis of a general rangeland model 29(1985)57
- Skiles, J.W., see Hanson, J.D.
A multi-species model for rangeland plant communities 44(1988)89
- Sklar, F.H., see Costanza, R.
Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45
- Sklar, F.H., Costanza, R. and Day Jr., J.W.
Dynamic spatial simulation modeling of coastal wetland habitat succession 29(1985) 261
- Sklar, F.H., see Turner, M.G.
Methods to evaluate the performance of spatial simulation models 48(1989)1
- Skogerboe, G.V.
Ecological modelling, monitoring and implementation in irrigated agriculture 31(1986) 45
- Škopek, V., see Štěrbáček, Z.
A composite landscape ecology prognostic expert system - COLEPES. Part I. System philosophy and design 50(1990)145
- Smith, I.R.
Control of population growth by events: an initial account 35(1987)175
- Smith, J.D., see Rejmánek, M.
Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- Smith Jr., J.W., see Mack, T.P.
A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269
- Soares Barreto, L.
The '3/2 power law': a comment on the specific constancy of K 45(1989)237

- Somers, G.L. and Oderwald, R.G.
Estimating and constructing confidence intervals for spatial patterns between random and regular 44(1988)57
- Somiya, I., see Fujii, S.
Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43
- Sparling, D.W., see Johnson, D.H.
A model of the productivity of the mallard duck 38(1987)257
- Spiller, C.B. and Auclair, A.N.D.
A mathematical model of seasonal and spatial variation in phosphorus concentrations in Lake Memphremagog, Quebec 34(1986)143
- Starfield, A.M., Form, B.P. and Taylor, R.H.
A rule-based ecological model for the management of an estuarine lake 46(1989)107
- Stefan, H.G., see Riley, M.J.
MINLAKE: a dynamic lake water quality simulation model 43(1988)155
- Steinhorst, R.K., Morgan, P. and Neuenchwander, L.F.
A stochastic-deterministic simulation model of shrub succession 29(1985)35
- Stephanopoulos, G., see Liepmann, D.
Development and global sensitivity analysis of a closed ecosystem model 30(1985)13
- Štěrbáček, Z., Škopek, V. and Zavázal, V.
A composite landscape ecology prognostic expert system - COLEPES. Part I. System philosophy and design 50(1990)145
- Stickney, R.R., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169
- Stickney, R.R., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191
- Stickney, R.R., see Cuenco, M.L.
Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73
- Stinner, R.L., see Schaalje, G.B.
Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233
- Stohlgren, T.J. and Rundel, P.W.
A population model for a long-lived, resprouting chaparral shrub: *Adenostoma fasciculatum* 34(1986)245
- Stone, N.D., see Saarenmaa, H.
An artificial intelligence modelling approach to simulating animal-habitat interactions 44 (1988)125
- Storey, J., see Lam, D.C.L.
Watershed acidification models using the knowledge-based systems approach 47(1989) 131
- Straškraba, M.
Third symposium simulation of systems in biology and medicine - SISY, Praha, Czechoslovakia, 22-25 November 1982 26 (1984)3
- Straškraba, M., see Bakule, L.
On optimality in multispecies ecosystems 26 (1984)33
- Straškraba, M.
Ecological modelling at the fourth symposium 'simulation of systems in biology and medicine' - Sisy, Praha, Czechoslovakia, 12-14 November 1984 39(1987)1
- Straškraba, M., see Mauersberger, P.
Two approaches to generalized ecosystem modelling: thermodynamic and cybernetic 39 (1987)161
- Straškraba, M., see Bakule, L.
On structural control strategies in aquatic ecosystems 39(1987)171
- Straškraba, M., see Lhotka, L.
Combinatorial model of ecosystem dynamics 39(1987)181
- Straškraba, M., see Kmeř, T.
Global behaviour of a generalized aquatic ecosystem model 45(1989)95
- Sudo, R., see Takasaki, M.
A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283

- Sueishi, T., Morioka, T. and Rouviere, C.
Analysis and cartographical approach to the regional water utilization system in the Yodo River basin 31(1986)315
- Suga, Y., Futagami, T., Okano, K., Tanaka, S. and Sugimura, T.
A microcomputer system for remotely sensed image data on ecological environments 32(1986)15
- Sugimura, T., see Suga, Y.
A microcomputer system for remotely sensed image data on ecological environments 32(1986)15
- Sullivan, P.J.
Effect of boundary conditions, region length, and diffusion rates on a spatially heterogeneous predator-prey system 43(1988)235
- Summers, J.K.
A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279
- Summers, J.K., see Polgar, T.T.
Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201
- Summers, J.K., see Rose, K.A.
Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111
- Summers, J.K.
Simulating the indirect effects of power plant entrainment losses on an estuarine ecosystem 49(1989)31
- Suzuki, K., see Kachi, N.
A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105
- Suzuki, M., see Ohuchi, A.
Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149
- Suzuki, Y., see Hakamata, T.
Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71
- Svetlosanov, V.A.
The problem of ecosystem stability and some applications of one of the stochastic methods in investigation of this problem 28(1985)311
- Svirezhev, Y.M., see Logofet, D.O.
Averaging and aggregation in ecological models: an attempt at a non-linear approach 34(1986)217
- Swartzman, G., see Kaluzny, S.
Simulation experiments comparing alternative process formulations using a factorial design 28(1985)181
- Swartzman, G.L., see Rose, K.A.
Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)1
- Swayne, D.A., see Lam, D.C.L.
Watershed acidification models using the knowledge-based systems approach 47(1989)131
- Swayne, I. Wong and D.A., Murthy, C.R. and Lam, D.C.L.
Fast graphical simulations of spills and plumes for application to the great lakes 47(1989)161
- Swift, D.M., see Lauenroth, W.K.
Estimating aboveground net primary production in grasslands: a simulation approach 33(1986)297
- Szyrmer, J. and Ulanowicz, R.E.
Total flows in ecosystems 35(1987)123

T

- Takada, T. and Iwasa, Y.
Size distribution dynamics of plants with interaction by shading 33(1986)173
- Takahashi, S., see Shiyomi, M.
Modelling of energy flows and conversion efficiencies in a grassland ecosystem 32(1986)119

- Takasaki, M., Sato, A., Okada, M. and Sudo, R.
A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283
- Takashima, F., see Dabrowski, K.
Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195
- Takeuchi, Y. and Adachi, N.
Dynamics and stability of ecological models 32(1986)95
- Tamura, H. and Ishida, T.
Environmental-economic models for total emission control of regional environmental pollution - input-output approach 30(1985) 163
- Tanaka, N.I., see Eston, V.R.
Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99
- Tanaka, S., see Suga, Y.
A microcomputer system for remotely sensed image data on ecological environments 32 (1986)15
- Tanaka, T., see Nishida, N.
An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85
- Taub, F.B., see Rose, K.A.
Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988) 1
- Taylor, A.H.
Characteristic properties of models for the vertical distribution of phytoplankton under stratification 40(1988)175
- Taylor, J.A., Simpson, R.W. and Jakeman, A.J.
A hybrid model for predicting the distribution of sulphur dioxide concentrations observed near elevated point sources 36(1987) 269
- Taylor, R.H., see Starfield, A.M.
A rule-based ecological model for the management of an estuarine lake 46(1989)107
- Tennyson, R., see Gutierrez, A.P.
A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231
- Teramoto, E.
Island colonization and population structure of species pool 31(1986)61
- Tercafs, R.
A computer system to assist optimization of land management 31(1986)355
- Thérien, N., see Morrison, K.A.
Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97
- Tonkikh, A.P., see Voinov, A.A.
Qualitative model of eutrophication in macrophyte lakes 35(1987)211
- Tóth, D., see Kmeř, T.
Verification of the mathematical model of nitrogen circulation with and without light access 46(1989)135
- Totsuka, T., see Kachi, N.
A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105
- Trapp, S., see Matthies, M.
Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47 (1989)115
- Trigo, N.
FLEX-REFLEX approach to ecological modeling 36(1987)65
- Trost, N.
An approximate formula for the daily photoproduction of forest tree canopies 49(1989) 297
- Truty, G.L., see Kot, M.
Changing criteria for imposing order 43 (1988)75
- Tsuchiya, K., see Ogawa, K.
Modelling of industrial ecological systems for evaluation of health services 31(1986)329
- Tsuno, H., see Fujii, S.
Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43

- Tummala, R.L., see Carruthers, R.I.
A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- Tung, Y.-K. and Hathhorn, W.E.
Probability distribution for critical DO location in streams 42(1988)45
- Tung, Y.-K. and Hathhorn, W.E.
Determination of the critical locations in a stochastic stream environment 45(1989)43
- Turner, M.A., see Polgar, T.T.
Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201
- Turner, M.G., Costanza, R. and Sklar, F.H.
Methods to evaluate the performance of spatial simulation models 48(1989)1
- Twinch, A.J., see Cochrane, K.L.
An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207
- Tyagi, N.K.
Managing salinity through conjunctive use of water resources 40(1988)11

U

- Uchrin, C.G., see Park, S.S.
A numerical mixing zone model for water quality assessment in natural streams: conceptual development 42(1988)233
- Ukita, M., see Nakanishi, H.
Study on the modelling of the behavior of phosphorus released from sediments 31(1986)105
- Ulanowicz, R.E., see Hirata, H.
Large-scale system perspectives on ecological modelling and analysis 31(1986)79
- Ulanowicz, R.E., see Szyrmer, J.
Total flows in ecosystems 35(1987)123
- Ulanowicz, R.E.
On the importance of higher-level models in ecology 43(1988)45

- Umbach, E.
Socio-economic systems as causal factors in the dynamics of ecosystems 46(1989)305
- Undurraga, A., see Iriberry, J.
Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113
- Upadhyaya, S.K., Rand, R.H. and Cooke, J.R.
Role of stomatal oscillations on transpiration, assimilation and water-use efficiency of plants 41(1988)27
- Uscher, M.B., see Reeves, S.A.
Application of a diffusion model to the spread of an invasive species: the coypu in Great Britain 47(1989)217
- Uschold, M., see Muetzelfeldt, R.
The use of prolog for improving the rigour and accessibility of ecological modelling 46(1989)9

V

- Valleron, A.-J., see Garnerin, Ph.
Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986)123
- van de Kamer, J.P.G., see Klepper, O.
A definition of the consistency of the carbon budget of an ecosystem, and its application to the Oosterschelde estuary, S.W. Netherlands 42(1988)217
- Van Der Merwe, M., see Fairall, N.
A general model of population growth in the hyrax *Procavia capensis* 34(1986)115
- Van der Ploeg, S.W.F., Braat, L.C. and Van Lierop, W.F.J.
Integration of resource economics and ecology 38(1987)171
- van Duin, E.H.S. and Lijklema, L.
Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243

- van Keulen, H., see Seligman, N.G.
Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989) 303
- Van Lierop, W.F.J., see Braat, L.C.
Economic-ecological modeling: an introduction to methods and applications 31(1986)33
- Van Lierop, W.F.J., see Van der Ploeg, S.W.F.
Integration of resource economics and ecology 38(1987)171
- van Straalen, N.M.
Turnover of accumulating substances in populations with weight-structure 36(1987)195
- Van Winkle, W., see Breck, J.E.
Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1
- Vardavas, I.M.
A simple model for rapidly computing terrestrial flux, solar flux and global mean surface temperature 35(1987)189
- Vardavas, I.M.
Modelling the seasonal variation of net all-wave radiation flux and evaporation in a tropical wet-dry region 39(1987)247
- Vardavas, I.M.
A simple water balance daily rainfall-runoff model with application to the tropical Magela Creek catchment 42(1988)245
- Vardavas, I.M.
A water budget model for the tropical magela flood plain 46(1989)165
- Vardavas, I.M.
A Fibonacci search technique for model parameter selection 48(1989)65
- Varis, O.
Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137
- Vasilyev, A., see Krysanova, V.
Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7
- Vaughan, D.S., see Linder, E.
Application of event tree risk analysis to fisheries management 36(1987)15
- Vermeulen, P.J., see Fairall, N.
A general model of population growth in the hyrax *Procavia capensis* 34(1986)115
- Vertinsky, I.
An ecological model of resilient decision making: an application to the study of public and private sector decision making in Japan 38(1987)141
- Vilkova, L.P., see Krapivin, V.F.
Model estimation of excess CO₂ distribution in biosphere structure 50(1990)57
- Villacorta, A.M., see Gutierrez, A.P.
A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231
- Villeneuve, J.-P., see Padilla, F.
Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73
- Virtanen, M., Koponen, J., Dahlbo, K. and Sarkkula, J.
Three-dimensional water-quality-transport model compared with field observations 31(1986)185
- Vlad, M.O.
A harvesting problem in structured population dynamics 41(1988)229
- Vlad, M.O.
A new nonlinear model for the growth of age-structured populations living in patchy habitats 43(1988)251
- Vogelsaenger, T., see Dürching, W.
Methodological aspects of modelling tumor growth and treatment 32(1986)191
- Voinov, A.A. and Tonkikh, A.P.
Qualitative model of eutrophication in macrophyte lakes 35(1987)211
- Volohonsky, H.
Form-building potencies of photons and the structural dynamics of ecosystems 28(1985) 139

- Volohonsky, H.
Ecosystem's memory in the context of structural dynamics 33(1986)59
- Vyhnálek, V.
Interactions between algae and zooplankton in a continuous cultivation system 39(1987)33
- W**
- Walker, J., see Sharpe, P.J.H.
A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189
- Walker, J., see Wu, H.-I.
Ecological field theory: a spatial analysis of resource interference among plants 29(1985)215
- Walker, J., see Wu, H.
Simulation of two-dimensional point patterns: application of a lattice framework approach 38(1987)299
- Walker, R.
Regional development and renewable resource exploitation 37(1987)303
- Walkes, R.
A comment on linear control problems in the theory of renewable resource exploitation 30(1985)309
- Wallace, L.L., see Coughenour, M.B.
Simulation study of East-African perennial graminoid responses to defoliation 26(1984)177
- Wallach, D. and Goffinet, B.
Mean squared error of prediction as a criterion for evaluating and comparing system models 44(1988)299
- Warwick, J.J. and Cale, W.G.
Estimating model reliability using data with uncertainty 41(1988)169
- Watanabe, M., see Goda, T.
Preface 31(1986)
- Watanabe, M. and Harashima, A.
Interaction between motile phytoplankton and Langmuir circulation 31(1986)175
- Waterhouse, J.C., see DeAngelis, D.L.
Ecological modelling and disturbance evaluation 29(1985)399
- Wehrle, M.M., see Byrne, S.V.
Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63
- Weinrich, B.E., see Rogowski, A.S.
Modeling the effects of mining and erosion on biomass production 35(1987)85
- Wenzel, V., see Knijnenburg, A.
Concept and usage of the interactive simulation system for ecosystems SONCHES 26(1984)51
- Westergaard, B., see Jørgensen, S.E.
Validation of a prognosis based upon a eutrophication model 32(1986)165
- Whitfield, G.H., see Carruthers, R.I.
A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- Wilkie, D.S. and Finn, J.T.
A spatial model of land use and forest regeneration in the Ituri forest of northeastern Zaire 41(1988)307
- Williams, W.A., see Larsen, L.C.
Fitting De Wit competition models with general nonlinear regression programs 41(1988)147
- Wilson, L.J., see Young, J.H.
Use of Bose-Einstein statistics in population dynamics models of arthropods 36(1987)89
- Windolf-Nielsen, J., see Jørgensen, S.E.
Validation of a prognosis based upon a eutrophication model 32(1986)165
- Wissel, C., see Schmitt, T.
Interdependence of ecological risk and economic profit in the exploitation of renewable resources 28(1985)201
- Wissel, C., see Duffy, D.C.
Models of fish school size in relation to environmental productivity 40(1988)201

- Wlosinski, J.H. and Collins, C.D.
Evaluation of a water quality model (CE-QUAL-R1) using data from a small Wisconsin reservoir 29(1985)303
- Wolfe, J.R., Zweig, R.D. and Engstrom, D.G.
A computer simulation model of the solar-algae pond ecosystem 34(1986)1
- Woods, S.M., see Kawamoto, H.
A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137
- Woolhouse, M.E.J. and Harmsen, R.
A transition matrix model of seasonal changes in mite populations 37(1987)167
- Woolhouse, M.E.J. and Harmsen, R.
A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- Woolhouse, M.E.J.
On the dynamical behaviour of transition matrix population models 42(1988)61
- Woolhouse, M.E.J. and Harmsen, R.
A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269
- Worton, B.J.
A review of models of home range for animal movement 38(1987)277
- Wright, A.H., see Reinhardt, E.
An advisory expert system for designing fire prescriptions 46(1989)121
- Wu, H., Rykiel Jr., E.J., Sharpe, P.J.H. and Zou, G.
A statistical physics approach to nearest neighbor distribution for individuals of finite size 36(1987)73
- Wu, H., Malafant, K.W.J., Pendridge, L.K., Sharpe, P.J.H. and Walker, J.
Simulation of two-dimensional point patterns: application of a lattice framework approach 38(1987)299
- Wu, H.-I., see Olson Jr., R.L.
Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171
- Wu, H.-I., see Sharpe, P.J.H.
A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189
- Wu, H.-I., Sharpe, P.J.H., Walker, J. and Penridge, L.K.
Ecological field theory: a spatial analysis of resource interference among plants 29(1985)215
- Wyant, J.G., see Alig, R.J.
Projecting regional area changes in forest-land cover in the U.S.A. 29(1985)27
- ## Y
- Yasuoka, Y., see Kachi, N.
A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105
- Yearsley, J.R. and Lettenmaier, D.P.
Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201
- Young, J.H. and Wilson, L.J.
Use of Bose-Einstein statistics in population dynamics models of arthropods 36(1987)89
- ## Z
- Zavázal, V., see Štěrbáček, Z.
A composite landscape ecology prognostic expert system - COLEPES. Part I. System philosophy and design 50(1990)145
- Zhang, S.-M., see Liu, D.-S.
Kinetic model for degradative processes of pesticides in soil 37(1987)131

Zhang, S.-M., see Liu, D.-S.

Study on rate model of microbial degradation of pesticides in soil 41(1988)75

Zingales, F., Marani, A., Rinaldo, A. and Bendoricchio, G.

A conceptual model of unit-mass response function for nonpoint source pollutant runoff 26(1984)285

Zohary, T., see Cochrane, K.L.

An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207

Zou, C.-S., see Cheng, Z.-B.

Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191

Zou, G., see Wu, H.

A statistical physics approach to nearest neighbor distribution for individuals of finite size 36(1987)73

Zweig, R.D., see Wolfe, J.R.

A computer simulation model of the solar-algae pond ecosystem 34(1986)1

SUBJECT INDEX

Ecological Modelling, volumes 25-50

M

L

S

D

4

90

11

A

Abundance models

Density estimation applied to stochastic abundance models 45(1989)221

Acacia

Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48 (1989)221

Acanthaster planci

Is *Acanthaster planci* a near-optimal predator? 46(1989)239

Accumulation processes

Thermodynamics of accumulation processes applied to ecological modelling 26(1984)17

Accuracy

Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45

The need for accuracy in modelling: an example 30(1985)157

Acidification

Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231

Cation depletion rate as a measure of soil sensitivity to acidic deposition: theory 40(1988) 25

Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1

Watershed acidification models using the knowledge-based systems approach 47(1989)131

Hydrological modeling of acidified Canadian watersheds 50(1990)5

Acidifications

Significance of changes in K_c values for Ca-Al exchange and its effects on soil and water acidification predictions 44(1988)165

Adaptation

Contribution to the theory of adaptation with application to ecology 26(1984)21

Adenostoma fasciculatum

A population model for a long-lived, resprouting chaparral shrub: *Adenostoma fasciculatum* 34(1986)245

Aggregation

Averaging and aggregation in ecological models: an attempt at a non-linear approach 34 (1986)217

Aggregation in model ecosystems. 1. Perfect aggregation 37(1987)287

Aggregation and consistency problems in theoretical models of exploitative resource competition 40(1988)97

Aggregation error: research objectives and relevant model structure 41(1988)157

Modelling density-dependent aggregation and reproduction in certain terrestrial and marine ecosystems: a comparative study 41 (1988)219

Aggregation in stochastic ecosystem models 44 (1988)153

Agricultural ecosystems

Concept and usage of the interactive simulation system for ecosystems SONCHES 26(1984) 51

Simulation study of East-African perennial graminoid responses to defoliation 26(1984) 177

A mechanistic simulation analysis of water use, leaf angles, and grazing in East-African graminoids 26(1984)203

A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231

A mathematical model for formulating intercrop proportions for intercropping systems' design 27(1985)81

Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30(1985)83

A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30(1985)247

Ecological modelling, monitoring and implementation in irrigated agriculture 31(1986)45

Extinction time of a sample of Karst pastures due to bush encroachment 33(1986)85

Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89

A systems approach to research and simulation of insect pest dynamics in the onion agroecosystem 33(1986)101

Modeling soil erosion, transport and deposition 33(1986)255

A model for predicting the influence of moisture stress on crop losses caused by ozone 35(1987)29

Stability and instability of an adaptive resource replacement strategy in an agroecological production system 35(1987)165

Economics as mechanics and the demise of biological diversity 38(1987)107

Spatial heterogeneity in yield-pest relationships for crop loss assessment 41(1988)67

Use of remotely-sensed information in agricultural crop growth models 41(1988)247

Evaluation of an ozone x moisture stress interaction model for soybean 41(1988)269

Analysis of mathematical principles in crop growth simulation models 47(1989)291

Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7

Airborne fraction

Asymptotic analysis of airborne fraction used to validate global carbon models 36(1987)139

Algae

Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303

Interactions between algae and zooplankton in a continuous cultivation system 39(1987)33

Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

Alluvial landscapes

Random field modelling of spatial variations in erosion and deposition in flat alluvial landscapes in arid central Australia 33(1986)269

Alpine tundra

Response of alpine tundra to a changing climate: a hierarchical simulation model 49(1989)205

Aluminium

Significance of changes in K_e values for Ca-Al exchange and its effects on soil and water acidification predictions 44(1988)165

Animal-habitat interactions

An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125

AI modelling of animal movements in a heterogeneous habitat 46(1989)57

Antarctica

Evaluation - by cluster analysis - of descriptors for the establishment of significant subunits in Antarctic soils 50(1990)79

Aphanizomenon flos-aquae

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

Aquaculture

Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169

Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

A computer simulation model of the solar-algae pond ecosystem 34(1986)1

Protein and fat dynamics in fish: bioenergetic model applied to aquaculture 50(1990)33

AQUAMOD

Global behaviour of a generalized aquatic ecosystem model 45(1989)95

Aquatic ecosystems - see also lagoon ecosystems, lake ecosystems, marine ecosystems, reservoirs, river ecosystems, wetland ecosystems

Aquatic ecosystems - general

Simulation of functioning of a complex ecosystem 26(1984)9

On optimality in multispecies ecosystems 26(1984)33

Analysis of structural stability of aquatic ecosystems as an aid for ecosystem control 27(1985)221

Basin-wide ecological fate model for management of chemicals hazard 31(1986)267

Analysis of community interactions using linear transfer function models 36(1987)101

On structural control strategies in aquatic ecosystems 39(1987)171

Strategies and difficulties of applying models to aquatic populations and food webs 43(1988)57

Global behaviour of a generalized aquatic ecosystem model 45(1989)95

Verification of the mathematical model of nitrogen circulation with and without light access 46(1989)135

Application of a guaranteed regression model to trophic interaction in an aquatic system 49(1989)1

Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7

Art

Theory and model of art and technology in ecology 50(1990)213

Arthropods

Use of Bose-Einstein statistics in population dynamics models of arthropods 36(1987)89

Articulation

Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45

Artificial intelligence

Applying artificial intelligence techniques to ecological modeling 38(1987)191

An artificial intelligence modelling approach to simulating animal-habitat interactions 44(1988)125

Artificial intelligence and expert systems in ecology and natural resource management 46 (1989)3

The use of prolog for improving the rigour and accessibility of ecological modelling 46(1989)9

A demographic simulator with deeply coupled semantic and numeric data structures 46 (1989)35

AI modelling of animal movements in a heterogeneous habitat 46(1989)57

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

An expert system for a rangeland simulation model 46(1989)91

A rule-based ecological model for the management of an estuarine lake 46(1989)107

An advisory expert system for designing fire prescriptions 46(1989)121

Averaging

Averaging and aggregation in ecological models: an attempt at a non-linear approach 34 (1986)217

B

Bacteria

Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113

Study and modelling of a simple planktonic system reconstituted in an experimental microcosm 34(1986)61

Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45

Bistability in the chemostat 43(1988)287

Bark beetle

A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109

Barnacles

Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

BAUMTOD

Dynamics of forest dieback: systems analysis and simulation 34(1986)259

Bay anchovy

Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201

BEEPOP

BEEPOP: a honeybee population dynamics simulation model 45(1989)133

Behaviour - animal

Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327

A honeybee colony swarming model 33(1986)137

A review of models of home range for animal movement 38(1987)277

Models of fish school size in relation to environmental productivity 40(1988)201

Theoretical analysis of rhythmical clustering in an intertidal gastropod 44(1988)177

A simulation model of seasonal migration and daily movements of the northern fur seal 48 (1989)193

BEM

Submodels for the nutrient loading estimation on river Zala 26(1984)115

Bioeconomics

- A bioeconomic model of harvesting a multi-species fishery 32(1986)267

Bioenergetics

- Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169
- Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191
- Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73
- Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195
- Simulation of the potential for life history components to regulate walleye population size 45(1989)27
- Protein and fat dynamics in fish: bioenergetic model applied to aquaculture 50(1990)33

Biology - general

- Third symposium simulation of systems in biology and medicine - SISY, Praha, Czechoslovakia, 22-25 November 1982 26(1984)3
- Ecological modelling at the fourth symposium 'simulation of systems in biology and medicine' - SisY, Praha, Czechoslovakia, 12-14 November 1984 39(1987)1

Biomass

- Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353
- Modeling the effects of mining and erosion on biomass production 35(1987)85
- A regional carbon storage simulation for large-scale biomass plantations 36(1987)171

- Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103

- Dynamic 2-D model of plant communities 50(1990)95

Blue grama

- Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83
- A gap dynamics simulation model of succession in a semiarid grassland 49(1989)229

Bootstrap

- Probabilistic validation of computer simulations using the bootstrap 46(1989)213

Bose-Einstein statistics

- Use of Bose-Einstein statistics in population dynamics models of arthropods 36(1987)89

Bromine

- A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29(1985)315

C**Calcite precipitation**

- Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59

Calcium

- Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing

- survival of a fish population: a model demonstration 41(1988)1
- Significance of changes in K_c values for Ca-Al exchange and its effects on soil and water acidification predictions 44(1988)165
- Sensitivity of cycling measures derived from ecological flow analysis 48(1989)45
- Capture-recapture data**
- Erlangian models for capture-recapture data 40(1988)161
- Carbon**
- A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279
- Modeling needs for predicting responses to CO₂ enrichment: Plants, communities and ecosystems 29(1985)77
- Predicting the response of plants to increasing carbon dioxide: a critique of plant growth models 29(1985)107
- Particle sedimentation in the ocean 30(1985)229
- Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205
- A simple model for rapidly computing terrestrial flux, solar flux and global mean surface temperature 35(1987)189
- Asymptotic analysis of airborne fraction used to validate global carbon models 36(1987)139
- A regional carbon storage simulation for large-scale biomass plantations 36(1987)171
- A simulation of saltmarsh water column dynamics 36(1987)211
- Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201
- A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- A definition of the consistency of the carbon budget of an ecosystem, and its application to the Oosterschelde estuary, S.W. Netherlands 42(1988)217
- A multi-species model for rangeland plant communities 44(1988)89
- A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231
- Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83
- Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48(1989)221
- Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Model estimation of excess CO₂ distribution in biosphere structure 50(1990)57
- Cartography**
- Analysis and cartographical approach to the regional water utilization system in the Yodo River basin 31(1986)315
- Catastrophe theory**
- Analysis of structural stability of aquatic ecosystems as an aid for ecosystem control 27(1985)221
- Optimal stocking for semi-desert range: a catastrophe theory model 27(1985)285
- Control of population growth by events: an initial account 35(1987)175
- Practical aspects of modelling ecological phenomena using the cusp catastrophe 42(1988)265
- Catastrophe theory in ecology: a critical review and an example of the butterfly catastrophe 49(1989)125

Cation depletion

Cation depletion rate as a measure of soil sensitivity to acidic deposition: theory 40(1988) 25

Cattle

Hierarchical foraging models: effects of stocking and landscape composition on simulated resource use by cattle 46(1989)283

CE-QUAL-R1

Evaluation of a water quality model (CE-QUAL-R1) using data from a small Wisconsin reservoir 29(1985)303

Cereal leaf beetle

Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30(1985)83

Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89

Chemicals - environmental behaviour

A model illustrating the environmental fate, exposure and human uptake of persistent organic chemicals 47(1989)85

Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47(1989)115

Chemicals - general

Basin-wide ecological fate model for management of chemicals hazard 31(1986)267

Chemostat

Bistability in the chemostat 43(1988)287

Chlamydomonas geitleri

Interactions between algae and zooplankton in a continuous cultivation system 39(1987)33

Chlorination

Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215

Chlorophyll

Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149

Simulating the development of chlorophyll maxima in the Celtic sea 33(1986)1

Climate

ARMA techniques for modelling tree-ring response to climate and for reconstructing variations of paleoclimates 33(1986)149

Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101

Response of alpine tundra to a changing climate: a hierarchical simulation model 49(1989)205

An approximate formula for the daily photo-production of forest tree canopies 49(1989) 297

Closed ecosystems

Development and global sensitivity analysis of a closed ecosystem model 30(1985)13

Analysis of community interactions using linear transfer function models 36(1987)101

A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137

Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 48(1989)291

Cluster analysis

Structuring of ecological data sets by methods of correlation and cluster analysis 32(1986)1

An index to measure the strength of relationship between community and site 40(1988) 145

Evaluation - by cluster analysis - of descriptors for the establishment of significant subunits in Antarctic soils 50(1990)79

Coastal ecosystems

Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113

A simulation of saltmarsh water column dynamics 36(1987)211

Codling moth

A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30(1985) 247

Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139

Cognitive structures

Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29

COLEPES

A composite landscape ecology prognostic expert system - COLEPES. Part I. System philosophy and design 50(1990)145

Colonization

Island colonization and population structure of species pool 31(1986)61

Community control

Stochastic theory of community control 39 (1987)121

Community-site relationship

An index to measure the strength of relationship between community and site 40(1988) 145

Compartmental ecosystems

Further aspects of the analysis of indirect effects in ecosystems 31(1986)69

Residence time in constant compartmental ecosystems 32(1986)243

A compartmental model of metabolite utilization for plant growth 39(1987)17

Compartmental models

Extended input-output flow analysis of ecosystems 32(1986)137

Integration of resource economics and ecology 38(1987)171

Competition - interspecific

Influence of territoriality on the stability and coexistence of competing predators - a simulation study 27(1985)95

Competitive overgrowth interactions among sessile colonial invertebrates: a comparison of stochastic and phenotypic variation 27(1985) 299

Use of overlap indices as competition coefficients: tests with field data 34(1986)231

Simple models for exploitative and interference competition 35(1987)113

Interference (and facilitation) among species that exploit alternative resources 40(1988) 111

Competition - intraspecific

A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

Complexity

- Simulation of functioning of a complex ecosystem 26(1984)9
- Contribution to the theory of adaptation with application to ecology 26(1984)21
- Simulation experiments comparing alternative process formulations using a factorial design 28(1985)181
- Increasing complexity and energy flow in models of food webs 29(1985)5
- An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85
- Errors of construction, evaluation, and inference: a classification of sources of error in ecological models 36(1987)297
- Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201

Computer hardware

- Microcomputers in ecological modelling: A special issue dedicated to research, education and computer graphics 47(1989)3

Computer software

- Interactive software tools, BGS-II and BGS-III, for ecological simulation 32(1986)71
- Fitting De Wit competition models with general nonlinear regression programs 41(1988)147
- The use of prolog for improving the rigour and accessibility of ecological modelling 46(1989)9
- Microcomputers in ecological modelling: A special issue dedicated to research, education and computer graphics 47(1989)3
- Learning to simulate ecological models on a microcomputer 47(1989)7
- A report on some recent experiences in developing environmental software 47(1989)19
- TIME-ZERO: the integrated modeling environment 47(1989)33

Modelling for managers 47(1989)53

Spreadsheets, PC's, and the finite-difference solutions for ecological distribution 47(1989)65

A computer program to display animations within the computer graphics halo environment 47(1989)153

Fast graphical simulations of spills and plumes for application to the great lakes 47(1989)161

Extreme event risk analysis for age-structured populations 47(1989)175

An algorithm to plot hasse diagrams on microcomputers and calcomp plotters 47(1989)189

Congruous attraction

The law of congruous attraction and the structure of zooplankton communities 34(1986)83

Connectance

Connectance in linear and Volterra systems 35(1987)157

Control strategies

On structural control strategies in aquatic ecosystems 39(1987)171

CORES

A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279

Cotton

A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231

Cotton rat

Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177

Coypu

Application of a diffusion model to the spread of an invasive species: the coypu in Great Britain 47(1989)217

Critical location

Probability distribution for critical DO location in streams 42(1988)45

Determination of the critical locations in a stochastic stream environment 45(1989)43

Cultivation systems

Interactions between algae and zooplankton in a continuous cultivation system 39(1987)33

Cusp catastrophe

Practical aspects of modelling ecological phenomena using the cusp catastrophe 42(1988)265

Cybernetics

Two approaches to generalized ecosystem modelling: thermodynamic and cybernetic 39(1987)161

D**Data analysis**

A statistical technique for analysis of environmental data containing periodic variance components 32(1986)59

A methodology for deriving model input parameters from a set of environmental data 40(1988)155

Data worth

Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201

De Wit models

Fitting De Wit competition models with general nonlinear regression programs 41(1988)147

Deer

Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41

AI modelling of animal movements in a heterogeneous habitat 46(1989)57

Defoliation

Simulation study of East-African perennial graminoid responses to defoliation 26(1984)177

A mechanistic simulation analysis of water use, leaf angles, and grazing in East-African graminoids 26(1984)203

Deforestation

Deforestation and diversity of life zones in the Brazilian Amazon: a map analysis 49(1989)267

Demography

A demographic simulator with deeply coupled semantic and numeric data structures 46(1989)35

Density - population

Lotka-Volterra models of mutualism and positive density-dependence 27(1985)251

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

Models of sterile insect releases for populations under attack by parasitoids 36(1987)155

Density estimation applied to stochastic abundance models 45(1989)221

Desert ecosystems

- A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179

Diffusion

- Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89
- Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- An advection-diffusion pollution model of the lagoon of Venice 37(1987)47
- Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987) 81
- Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103

***Dipodomys* spp.**

- Dipodomys* populations as energy-processing systems: regulation, competition, and hierarchical organization 50(1990)157

Diseases - animal

- Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986) 123

Diseases - plant

- A simulation model of the fungus *Phytophthora infestans* (Mont) de Bary 28(1985)121

Disturbance

- System theory formulation of ecological disturbance 29(1985)383
- Ecological modelling and disturbance evaluation 29(1985)399

Drainage

- Stability of artificially-drained lowlands: a theoretical assessment 27(1985)69

Drinking water

- Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303
- Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215

Duck

- The need for accuracy in modelling: an example 30(1985)157
- A model of the productivity of the mallard duck 38(1987)257

DYNAMO

- A computer simulation model of the solar-algae pond ecosystem 34(1986)1

DYNUMES

- Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327

E**E4CHEM**

- Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47 (1989)115

Ecological modelling – general

Foreword 29(1985)3

Foreword 36(1987)3

About your journal: Ecological modelling 50 (1990)1

Economics

Fur trade in Canada: an econometric analysis 27(1985)139

Interdependence of ecological risk and economic profit in the exploitation of renewable resources 28(1985)201

Projecting regional area changes in forestland cover in the U.S.A. 29(1985)27

Environmental-economic models for total emission control of regional environmental pollution – input-output approach 30(1985)163

Economic-ecological modeling: an introduction to methods and applications 31(1986)33

An economic-ecological model for regional land-use planning 31(1986)293

Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303

A bioeconomic model of harvesting a multi-species fishery 32(1986)267

A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275

Toward an ecological economics 38(1987)1

Foundations of an ecological economics 38 (1987)9

Neoclassical economics and principles of sustainable development 38(1987)19

Biophysical economics: historical perspective and current research trends 38(1987)47

Classical roots for a modern materials-energy analysis 38(1987)75

Biophysical and Marxist economics: Learning from each other 38(1987)91

Economics as mechanics and the demise of biodiversity 38(1987)107

An economic scenario that gives top priority to saving the environment 38(1987)123

An ecological model of resilient decision making: an application to the study of public and private sector decision making in Japan 38 (1987)141

Resource constraints: the need for community management in economic development strategies 38(1987)159

Integration of resource economics and ecology 38(1987)171

Socio-economic systems as causal factors in the dynamics of ecosystems 46(1989)305

Edge detection

Behavior of a multivariate algorithm for ecological edge detection 49(1989)179

Effectiveness

Articulation – accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45

EMSY

Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193

Energy

Form-building potencies of photons and the structural dynamics of ecosystems 28(1985) 139

Resource constraints: the need for community management in economic development strategies 38(1987)159

Holological study of lakes from an entropy viewpoint – Lake Mendota 45(1989)81

Energy intensity, residence time, exergy, and ascendancy in dynamic ecosystems 48(1989) 19

Energy flow

Energy cycling in the ecosystem 28(1985)1

Increasing complexity and energy flow in models of food webs 29(1985)5

Modelling of energy flows and conversion efficiencies in a grassland ecosystem 32(1986)119

Residence time in constant compartmental ecosystems 32(1986)243

Ecosystem's memory in the context of structural dynamics 33(1986)59

Classical roots for a modern materials-energy analysis 38(1987)75

Network trophic dynamics 42(1988)75

Network trophic dynamics: reply to R.A. Herendeen 42(1988)78

Characterizing populations as entities in ecosystem models: problems and limitations of mass-balance modeling 42(1988)89

Entropy

Entropy balance in Lake Biwa 37(1987)235

Entropy laws in ecological networks at steady state 42(1988)289

Holological study of lakes from an entropy viewpoint - Lake Mendota 45(1989)81

Environ analysis

Equivalence between input-output analysis and environ analysis as concerns flow partitions 30(1985)3

Environmental management

Scope and limit in the application of ecological models to environmental management - 1-V1 32(1986)237

An economic scenario that gives top priority to saving the environment 38(1987)123

Epidemiology

Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986)123

Equivalence

Use of logical equivalence in modeling ecological relations of oceanic phytoplankton 27(1985)25

Equivalence and its use 45(1989)1

Erlangian models

Erlangian models for capture-recapture data 40(1988)161

Erosion

Modeling soil erosion, transport and deposition 33(1986)255

Random field modelling of spatial variations in erosion and deposition in flat alluvial landscapes in arid central Australia 33(1986)269

Modeling the effects of mining and erosion on biomass production 35(1987)85

Error

Errors of construction, evaluation, and inference: a classification of sources of error in ecological models 36(1987)297

Bias in estimates of primary production: an analytical solution 44(1988)43

Mean squared error of prediction as a criterion for evaluating and comparing system models 44(1988)299

Estuary ecosystems

A definition of the consistency of the carbon budget of an ecosystem, and its application to the Oosterschelde estuary, S.W. Netherlands 42(1988)217

Simulating the indirect effects of power plant entrainment losses on an estuarine ecosystem 49(1989)31

European red mite

A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269

Eutrophic ecosystems

- Testing of a complex ecological model for shallow water bodies 26(1984)103
- Study on the modelling of the behavior of phosphorus released from sediments 31(1986)105
- Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145
- On the box model for prediction of water-quality in eutrophic lakes 31(1986)221

Eutrophication

- Modelling of stratified flow and eutrophication in reservoirs 31(1986)133
- An eutrophication model of Lake Kasumigaura 31(1986)201
- Assessment of the impact of eutrophication control measures on South African impoundments 31(1986)237
- Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303
- Validation of a prognosis based upon a eutrophication model 32(1986)165
- Examination of the generality of eutrophication models 32(1986)251
- Correlation of a lake eutrophication model to field experiments 34(1986)167
- Qualitative model of eutrophication in macrophyte lakes 35(1987)211
- Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103
- Effects of load reductions on the water quality of a large shallow lake 39(1987)85
- MINLAKE: a dynamic lake water quality simulation model 43(1988)155
- Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7

Evaporation

- Models for the physiological effects of short O₃ exposures on plants 30(1985)175
- Modelling the seasonal variation of net all-wave radiation flux and evaporation in a tropical wet-dry region 39(1987)247
- A theoretical model of the process of rainfall interception in forest canopy 42(1988)111
- A simple water balance daily rainfall-runoff model with application to the tropical Magela Creek catchment 42(1988)245

Event tree risk analysis

- Application of event tree risk analysis to fisheries management 36(1987)15

Exergy

- Structural dynamic model 31(1986)1
- Use of models as experimental tool to show that structural changes are accompanied by increased exergy 41(1988)117
- Energy intensity, residence time, exergy, and ascendancy in dynamic ecosystems 48(1989)19

Exploitation - population

- Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41
- A dynamic formulation for input-output modelling of exploited ecosystems 44(1988)143

EXSPUR

- An expert system for a rangeland simulation model 46(1989)91

F**Fate models**

- Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application

- of fate models for surface water and soil 47 (1989)115

Feeding and nutrition

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

A mathematical model of predation based upon the theory of nutrition kinetics 28(1985)155

Fibonacci search technique

A Fibonacci search technique for model parameter selection 48(1989)65

Fire

Simulation of competition between alternative shrub life history strategies through recurrent fires 27(1985)271

A stochastic-deterministic simulation model of shrub succession 29(1985)35

A population model for a long-lived, resprouting chaparral shrub: *Adenostoma fasciculatum* 34(1986)245

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

An advisory expert system for designing fire prescriptions 46(1989)121

Fire spread through nonhomogeneous fuel modelled as Markov process 48(1989)101

Fish

Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97

Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327

Contaminant uptake by fish and the potential for transfer to humans modelled over time 32(1986)281

A computer simulation model of the solar-algae pond ecosystem 34(1986)1

A recent increase in jellyfish populations: a predator-prey model and its implications 38(1987)243

Models of fish school size in relation to environmental productivity 40(1988)201

Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1

Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201

Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195

Simulating the indirect effects of power plant entrainment losses on an estuarine ecosystem 49(1989)31

Protein and fat dynamics in fish: bioenergetic model applied to aquaculture 50(1990)33

Fisheries

Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169

Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

A probabilistic model of the relationship between marshland-water interface and marsh disintegration 29(1985)245

Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353

A bioeconomic model of harvesting a multi-species fishery 32(1986)267

A nonlinear programming approach to the analysis of perturbed marine ecosystems under model parameter uncertainty 35(1987)1

A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275

Application of event tree risk analysis to fisheries management 36(1987)15

Fishery management implications of recruitment seasonality: simulation of the Texas fishery for the brown shrimp, *Penaeus aztecus* 36(1987)239

Dynamic optimization of combined harvesting of a two-species fishery 41(1988)17

Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988)183

FLEX-REFLEX approach

FLEX-REFLEX approach to ecological modeling 36(1987)65

Flood plains

A water budget model for the tropical mangrove flood plain 46(1989)165

Flow networks

A simple random path method for the analysis of flow networks 28(1985)165

Equivalence between input-output analysis and environmental analysis as concerns flow partitions 30(1985)3

Total flows in ecosystems 35(1987)123

Sensitivity of cycling measures derived from ecological flow analysis 48(1989)45

Food chain

Energy cycling in the ecosystem 28(1985)1

A simple random path method for the analysis of flow networks 28(1985)165

Network trophic dynamics 42(1988)75

Network trophic dynamics: reply to R.A. Herendeen 42(1988)78

Food webs

Increasing complexity and energy flow in models of food webs 29(1985)5

A simulation experiment to investigate food web polarization 41(1988)101

Strategies and difficulties of applying models to aquatic populations and food webs 43(1988)57

Predation in food webs 48(1989)267

Forest ecosystems

Water transfer from soil through plants to the atmosphere in willow energy forest 26(1984)251

A soil-plant-water model with a case study in a forested catchment 27(1985)235

Projecting regional area changes in forestland cover in the U.S.A. 29(1985)27

A comparison of tree growth models 29(1985)145

Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985)283

Stand development of mixtures of species with varying tolerances to shade 30(1985)71

Geographical maps on forest die-off, driven by dynamic models 31(1986)341

Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205

Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231

Numerical analysis of forest temperature. I. Diurnal variations 33(1986)315

Numerical analysis of forest temperature. II. Seasonal variations 33(1986)329

Dynamics of forest dieback: systems analysis and simulation 34(1986)259

Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63

- A parameter-based method for modelling biomass accumulations in forest stands: theory 36(1987)29
- A parameter-based method for modelling biomass accumulations in forest stands: an application 36(1987)49
- A regional carbon storage simulation for large-scale biomass plantations 36(1987)171
- Yield prediction models for *Pinus merkusii* plantations in Indonesia 36(1987)181
- Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- Products of photo-oxidation as a decisive factor of the new forest decline? - results and considerations 41(1988)281
- A spatial model of land use and forest regeneration in the Ituri forest of northeastern Zaire 41(1988)307
- A theoretical model of the process of rainfall interception in forest canopy 42(1988)111
- A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165
- Estimating and constructing confidence intervals for spatial patterns between random and regular 44(1988)57
- Degradation and subsequent regeneration of a forestry resource: a mathematical model 44(1988)219
- On the maximum growth equation used in forest gap simulation models 45(1989)63
- Analysis of forest succession with fuzzy graph theory 45(1989)261
- A computer model of the solar radiation, soil moisture, and soil thermal regimes in boreal forests 45(1989)275
- An advisory expert system for designing fire prescriptions 46(1989)121
- Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48(1989)221
- Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73
- Simulation of within-tree and between-tree shading of direct radiation in a forest canopy: effect of crown shape and sun elevation 49(1989)89
- Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101
- Deforestation and diversity of life zones in the Brazilian Amazon: a map analysis 49(1989)267
- Landscape fragmentation and dispersal in a model of riparian forest dynamics 49(1989)277
- An approximate formula for the daily photo-production of forest tree canopies 49(1989)297
- SPECOM - a single tree model of pine stand/ raw humus soil ecosystem 50(1990)107
- Forest tent caterpillar**
- Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- FOREST-BGC**
- A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- FORET**
- Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165

FORFLO

Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985) 283

Fox

Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986) 123

Freshwater ecosystems

Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45

Fruit fly

Simulation of fruit fly population dynamics, with particular reference to the olive fruit fly, *Dacus oleae* 40(1988)213

Fungi

A simulation model of the fungus *Phytophthora infestans* (Mont) de Bary 28(1985)121

Fur animals

Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145

Fur trade

Fur trade in Canada: an econometric analysis 27(1985)139

G**Gastropods**

Theoretical analysis of rhythmical clustering in an intertidal gastropod 44(1988)177

GEM-II

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

Geography

Geographical maps on forest die-off, driven by dynamic models 31(1986)341

GIRL

Global behaviour of a generalized aquatic ecosystem model 45(1989)95

Goodness of fit

Model goodness of fit: a multiple resolution procedure 47(1989)199

Fit of logspecies-logarea regression lines to nonequilibrium archipelagos: a simulation approach 47(1989)265

Graph theory

Analysis of forest succession with fuzzy graph theory 45(1989)261

Grassland ecosystems

Plant growth and production of grassland ecosystems: a comparison of modelling approaches 29(1985)131

Modelling of energy flows and conversion efficiencies in a grassland ecosystem 32(1986) 119

Estimating aboveground net primary production in grasslands: a simulation approach 33 (1986)297

Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989) 303

A gap dynamics simulation model of succession in a semiarid grassland 49(1989)229

Grazing systems

Simulation study of East-African perennial graminoid responses to defoliation 26(1984) 177

A mechanistic simulation analysis of water use, leaf angles, and grazing in East-African graminoids 26(1984)203

Optimal stocking for semi-desert range: a catastrophe theory model 27(1985)285

Rainfall risk in grazing management 41(1988) 85

A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231

Role of herbivore attack pattern in growth of plant populations 45(1989)307

Hierarchical foraging models: effects of stocking and landscape composition on simulated resource use by cattle 46(1989)283

Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83

Groundwater

The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49

Growth - animal

A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109

Fish bioenergetics and growth in aquaculture ponds: I. Individual fish model development 27(1985)169

Fish bioenergetics and growth in aquaculture ponds: II. Effects of interactions among size, temperature, dissolved oxygen, unionized ammonia and food on growth of individual fish 27(1985)191

On relations between bioaccumulation and weight of organisms 27(1985)207

Fish bioenergetics and growth in aquaculture ponds: III. Effects of intraspecific competition, stocking rate, stocking size and feeding rate on fish productivity 28(1985)73

Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195

Simulation of the potential for life history components to regulate walleye population size 45(1989)27

Growth - general

Effects of growth rates in models of size distribution formation in plants and animals 36(1987)119

Growth - plant

Theoretical limits of belowground production by *Spartina alterniflora*: an analysis through modelling 26(1984)155

A general distributed delay time varying life table plant population model: cotton (*Gossypium hirsutum* L.) growth and development as an example 26(1984)231

On relations between bioaccumulation and weight of organisms 27(1985)207

Modeling needs for predicting responses to CO₂ enrichment: Plants, communities and ecosystems 29(1985)77

Predicting the response of plants to increasing carbon dioxide: a critique of plant growth models 29(1985)107

Plant growth and production of grassland ecosystems: a comparison of modelling approaches 29(1985)131

A comparison of tree growth models 29(1985) 145

Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171

A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189

Material circulation and growth - with special reference to pollution problems 31(1986)125

- ARMA techniques for modelling tree-ring response to climate and for reconstructing variations of paleoclimates 33(1986)149
- Size distribution dynamics of plants with interaction by shading 33(1986)173
- Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205
- Dynamics of forest dieback: systems analysis and simulation 34(1986)259
- A compartmental model of metabolite utilization for plant growth 39(1987)17
- Robust parameter estimation for nonlinear models 41(1988)41
- A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55
- A multi-species model for rangeland plant communities 44(1988)89
- A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231
- On the maximum growth equation used in forest gap simulation models 45(1989)63
- A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179
- Analysis of mathematical principles in crop growth simulation models 47(1989)291
- Dynamic 2-D model of plant communities 50(1990)95

Growth - population

- A general model of population growth in the hyrax *Procavia capensis* 34(1986)115
- Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191
- A matrix modelling approach to population growth systems involving multiple time delays 34(1986)197
- Control of population growth by events: an initial account 35(1987)175

A functional interpretation of the logistic equation 42(1988)155

A new nonlinear model for the growth of age-structured populations living in patchy habitats 43(1988)251

Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303

Role of herbivore attack pattern in growth of plant populations 45(1989)307

Analysis of life table response experiments. I. Decomposition of effects on population growth rate 46(1989)221

Growth - tumour

Methodological aspects of modelling tumor growth and treatment 32(1986)191

Gypsy moth

Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63

H

HALO

A computer program to display animations within the computer graphics halo environment 47(1989)153

Hasse diagrams

An algorithm to plot hasse diagrams on microcomputers and calcomp plotters 47(1989)189

Health services

Modelling of industrial ecological systems for evaluation of health services 31(1986)329

HIPS

- A microcomputer system for remotely sensed image data on ecological environments 32 (1986)15

History

- Global land-use changes from 1860 to 1980 and future projections to 2500 44(1988)307

Home range

- A review of models of home range for animal movement 38(1987)277

Honeybee

- A honeybee colony swarming model 33(1986)137
- Seasonal changes of drone numbers in a colony of the honeybee, *Apis mellifera* 37(1987)155
- BEEPOP: a honeybee population dynamics simulation model 45(1989)133

Humus mineralization

- A general analytical model of the process of humus mineralization and accumulation in soil 44(1988)209

Hydrodynamics

- Three-dimensional water-quality-transport model compared with field observations 31 (1986)185
- Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59
- Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987)81
- Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103

- Impact of the hydrodynamic conditions on the primary production in an impounded river 39 (1987)227

Hydrology

- Stability of artificially-drained lowlands: a theoretical assessment 27(1985)69
- A soil-plant-water model with a case study in a forested catchment 27(1985)235
- Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985)283
- Applied carrying capacity concept for integrating stormwater management and land use planning, a case study: the Kuantu Plain of Taipei, Taiwan 33(1986)35
- Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185
- Modeling nutrient behavior in wetlands 40 (1988)37
- Evaluation of an ozone \times moisture stress interaction model for soybean 41(1988)269
- A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125
- A computer model of the solar radiation, soil moisture, and soil thermal regimes in boreal forests 45(1989)275
- A Fibonacci search technique for model parameter selection 48(1989)65
- A study on solute NO₃-N transport in the hydrologic response by an MRF model 48 (1989)159
- Hydrological modeling of acidified Canadian watersheds 50(1990)5

Hyrax

- A general model of population growth in the hyrax *Procavia capensis* 34(1986)115

I

Image data analysis

- A microcomputer system for remotely sensed image data on ecological environments 32 (1986)15

Indirect effects

- Further aspects of the analysis of indirect effects in ecosystems 31(1986)69

Industrial ecosystems

- Modelling of industrial ecological systems for evaluation of health services 31(1986)329

Industrialization

- Degradation and subsequent regeneration of a forestry resource: a mathematical model 44 (1988)219

INHIBSIM

- Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45

Input-output analysis

- Equivalence between input-output analysis and environ analysis as concerns flow partitions 30(1985)3
- Environmental-economic models for total emission control of regional environmental pollution - input-output approach 30(1985)163
- Extended input-output flow analysis of ecosystems 32(1986)137
- Total flows in ecosystems 35(1987)123
- Entropy laws in ecological networks at steady state 42(1988)289
- A dynamic formulation for input-output modelling of exploited ecosystems 44(1988)143

Insects

- A mechanistic simulation model for the movement and competition of bark beetle larvae (Coleoptera, Scolytidae) 27(1985)109
- Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30 (1985)83
- A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30(1985) 247
- Cereal leaf beetle spatial dynamics: simulations with a random diffusion model 33(1986)89
- A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- A honeybee colony swarming model 33(1986) 137
- Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63
- Models of sterile insect releases for populations under attack by parasitoids 36(1987)155
- Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139
- Seasonal changes of drone numbers in a colony of the honeybee, *Apis mellifera* 37(1987)155
- A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269
- Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- Simulation of fruit fly population dynamics, with particular reference to the olive fruit fly, *Dacus oleae* 40(1988)213
- Spatial heterogeneity in yield-pest relationships for crop loss assessment 41(1988)67
- Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303

RAGHUVA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Penisetum americanum* and *P. typhoides* phenology 44(1988)275

Is there an optimal sex ratio for insect mass rearing? 45(1989)205

Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233

A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137

Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 48(1989)291

Intercropping - see multispecies ecosystems

Interference

Simple models for exploitative and interference competition 35(1987)113

Interference (and facilitation) among species that exploit alternative resources 40(1988)111

Irrigation

Ecological modelling, monitoring and implementation in irrigated agriculture 31(1986)45

A model for predicting the influence of moisture stress on crop losses caused by ozone 35(1987)29

Managing salinity through conjunctive use of water resources 40(1988)11

Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83

Island biogeography

Fit of logspecies-logarea regression lines to nonequilibrium archipelagos: a simulation approach 47(1989)265

Island colonization

Island colonization and population structure of species pool 31(1986)61

J

Jellyfish

A recent increase in jellyfish populations: a predator-prey model and its implications 38(1987)243

K

Karst pastures

Extinction time of a sample of Karst pastures due to bush encroachment 33(1986)85

L

Lagoon ecosystems

Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1

A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21

An advection-diffusion pollution model of the lagoon of Venice 37(1987)47

Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59

Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987) 81

Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103

Lake ecosystems

Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97

Testing of a complex ecological model for shallow water bodies 26(1984)103

Submodels for the nutrient loading estimation on river Zala 26(1984)115

Simulation experiments comparing alternative process formulations using a factorial design 28(1985)181

Synthesis and analysis of a comprehensive lake model - with the evaluation of diversity of ecosystems 31(1986)11

Three-dimensional water-quality-transport model compared with field observations 31 (1986)185

An eutrophication model of Lake Kasumigaura 31(1986)201

On the box model for prediction of water-quality in eutrophic lakes 31(1986)221

A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283

Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43

An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85

Validation of a prognosis based upon a eutrophication model 32(1986)165

Examination of the generality of eutrophication models 32(1986)251

Modelling the fate of Mirex and Lindane in Lake Ontario, off the Niagara River mouth 33(1986)13

A mathematical model of seasonal and spatial variation in phosphorus concentrations in Lake Memphremagog, Quebec 34(1986)143

Correlation of a lake eutrophication model to field experiments 34(1986)167

Qualitative model of eutrophication in macrophyte lakes 35(1987)211

Entropy balance in Lake Biwa 37(1987)235

Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39 (1987)59

Effects of load reductions on the water quality of a large shallow lake 39(1987)85

Investigations of the lake ecosystem model EMSY by means of the simulation system SONCHES 41(1988)193

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

MINLAKE: a dynamic lake water quality simulation model 43(1988)155

Holological study of lakes from an entropy viewpoint - Lake Mendota 45(1989)81

Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243

A rule-based ecological model for the management of an estuarine lake 46(1989)107

Application of an inverse approach to a Canadian radioactive waste disposal site 46(1989) 195

Watershed acidification models using the knowledge-based systems approach 47(1989)131

Fast graphical simulations of spills and plumes for application to the great lakes 47(1989)161

Lake ecosystems – see also reservoirs

Leslie model revisited: some generalizations to block structures 48(1989)277

Land use planning

An economic-ecological model for regional land-use planning 31(1986)293

A computer system to assist optimization of land management 31(1986)355

Applied carrying capacity concept for integrating stormwater management and land use planning, a case study: the Kuantu Plain of Taipei, Taiwan 33(1986)35

A spatial model of land use and forest regeneration in the Ituri forest of northeastern Zaire 41(1988)307

Modelling nitrate removal by riparian vegetation in a springfed stream: the influence of land-use practices 42(1988)179

Global land-use changes from 1860 to 1980 and future projections to 2500 44(1988)307

Letter to the Editor 50(1990)221

Landscape structure

Landscape fragmentation and dispersal in a model of riparian forest dynamics 49(1989)277

A composite landscape ecology prognostic expert system – COLEPES. Part I. System philosophy and design 50(1990)145

Langmuir circulation

Interaction between motile phytoplankton and Langmuir circulation 31(1986)175

Leslie models

A matrix modelling approach to population growth systems involving multiple time delays 34(1986)197

Effects of toxicants on populations: a qualitative approach IV. Resource-consumer-toxicant models 35(1987)249

Extreme event risk analysis for age-structured populations 47(1989)175

Lesser cornstalk borer

A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269

Light

Form-building potencies of photons and the structural dynamics of ecosystems 28(1985)139

A model for the relationship between light intensity and the rate of photosynthesis in phytoplankton 42(1988)199

Verification of the mathematical model of nitrogen circulation with and without light access 46(1989)135

Logistic equation

Simple models for exploitative and interference competition 35(1987)113

The logistic equation and double jeopardy 36(1987)315

A functional interpretation of the logistic equation 42(1988)155

An assessment of several of the historically most influential theoretical models used in ecology and of the data provided in their support 43(1988)5

Logistic regression

Use of logistic regression in modelling prey selection by *Neomysis mercedis* 43(1988)225

Loop analysis

Stability of natural communities: loop analysis and computer simulation approach 40(1988)131

Lotka-Volterra models

Lotka-Volterra models of mutualism and positive density-dependence 27(1985)251

Dynamics and stability of ecological models 32 (1986)95

Use of overlap indices as competition coefficients: tests with field data 34(1986)231

Connectance in linear and Volterra systems 35 (1987)157

A ration-based model of a seaweed-sea urchin community 37(1987)249

An assessment of several of the historically most influential theoretical models used in ecology and of the data provided in their support 43(1988)5

Lotka-Volterra prey-predator model with harvesting and environmental perturbations 47 (1989)283

Lovoa trichilioides

Stand development of mixtures of species with varying tolerances to shade 30(1985)71

M**Man**

Analysis of cognitive structures of environment of local residents through word association methods 32(1986)29

Contaminant uptake by fish and the potential for transfer to humans modelled over time 32 (1986)281

A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275

Management strategies

Selection of optimal management strategies based on stochastic dynamic ecological models 36(1987)5

Marine ecosystems

A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29 (1985)315

Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327

Development and global sensitivity analysis of a closed ecosystem model 30(1985)13

Particle sedimentation in the ocean 30(1985)229

Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145

Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149

Effect of seawater on nitrification by attached biofilm 32(1986)183

Simulating the development of chlorophyll maxima in the celtic sea 33(1986)1

Study and modelling of a simple planktonic system reconstituted in an experimental microcosm 34(1986)61

A nonlinear programming approach to the analysis of perturbed marine ecosystems under model parameter uncertainty 35(1987)1

A ration-based model of a seaweed-sea urchin community 37(1987)249

Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213

Principles of computer-aided event simulation in marine ecology 39(1987)101

Estimation of marine production from size spectrum 42(1988)33

Life history and population dynamics of *Metridia pacifica*: results from simulation modelling 48(1989)113

Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153

Markov models

- A simple random path method for the analysis of flow networks 28(1985)165
- Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171
- A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189
- Ecological field theory: a spatial analysis of resource interference among plants 29(1985) 215
- Large-scale system perspectives on ecological modelling and analysis 31(1986)79
- A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105
- Extended input-output flow analysis of ecosystems 32(1986)137
- Residence time in constant compartmental ecosystems 32(1986)243
- Cithamalus bisinuatus* (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99
- A transition matrix model of seasonal changes in mite populations 37(1987)167
- A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988) 183
- TIME-ZERO: the integrated modeling environment 47(1989)33
- Fire spread through nonhomogeneous fuel modelled as Markov process 48(1989)101

Marxist approach

- Theory and measurement of unequal exchange: a comparison between a Marxist approach and an energy theory of value 41(1988)127

Mass-balance models

- Characterizing populations as entities in ecosystem models: problems and limitations of mass-balance modeling 42(1988)89

Materials-energy analysis

- Classical roots for a modern materials-energy analysis 38(1987)75

Matrix models - general

- A matrix modelling approach to population growth systems involving multiple time delays 34(1986)197

Medicine

- Third symposium simulation of systems in biology and medicine - SISY, Praha, Czechoslovakia, 22-25 November 1982 26(1984)3
- Methodological aspects of modelling tumor growth and treatment 32(1986)191
- Ecological modelling at the fourth symposium 'simulation of systems in biology and medicine' - Sisy, Praha, Czechoslovakia, 12-14 November 1984 39(1987)1
- Changing criteria for imposing order 43(1988) 75

MELEF-3v

- Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73

Memory - ecosystems

- Ecosystem's memory in the context of structural dynamics 33(1986)59

Metabolism - plant

- Whole-plant modelling: a continuous-time Markov (CTM) approach 29(1985)171

Metabolite utilization

- A compartmental model of metabolite utilization for plant growth 39(1987)17

Metals - trace

- Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986) 249

Migration

- Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327
- Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988)1
- A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193

Millet-head caterpillar

- RAGHUVA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Penisetum americanum* and *P. typhoides* phenology 44(1988)275

MINLAKE

- MINLAKE: a dynamic lake water quality simulation model 43(1988)155

Mites

- A transition matrix model of seasonal changes in mite populations 37(1987)167
- A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269

Model building

- Concept and usage of the interactive simulation system for ecosystems SONCHES 26(1984) 51

Model evaluation

- Mean squared error of prediction as a criterion for evaluating and comparing system models 44(1988)299

Model simplification

- Model simplification - three applications 27(1985)1

Model structure - general

- Is there a best model structure? III. Testing the goodness of fit 27(1985)15

Molluscs

- Chthamalus bisinuatus* (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

Monte Carlo models

- Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1
- Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111

Monte Carlo tests

- Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353
- Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986) 123
- Model complexity and data worth: an assessment of changes in the global carbon budget 39(1987)201
- A methodology for deriving model input parameters from a set of environmental data 40(1988)155

Mortality

- A computer modelling study of the population dynamics of the Screech Owl (*Otus asio*) 30(1985)105

A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233

Simulation of the potential for life history components to regulate walleye population size 45(1989)27

MULES

Characteristic properties of models for the vertical distribution of phytoplankton under stratification 40(1988)175

Multispecies ecosystems

On optimality in multispecies ecosystems 26 (1984)33

A mathematical model for formulating intercrop proportions for intercropping systems' design 27(1985)81

Numerical simulation of fish migrations in the eastern Bering Sea 29(1985)327

A bioeconomic model of harvesting a multi-species fishery 32(1986)267

Dynamic optimization of combined harvesting of a two-species fishery 41(1988)17

Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)1

Mussels

Chthamalus bisinuatus (Cirripedia) and *Brachiodontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

N

Nauclea diderrichii

Stand development of mixtures of species with varying tolerances to shade 30(1985)71

Nearest-neighbour distribution

Ecological field theory: a spatial analysis of resource interference among plants 29(1985)215

A statistical physics approach to nearest neighbor distribution for individuals of finite size 36(1987)73

Neomysis mercedis

Use of logistic regression in modelling prey selection by *Neomysis mercedis* 43(1988)225

Nitrogen

Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986)249

Effect of seawater on nitrification by attached biofilm 32(1986)183

A simulation of saltmarsh water column dynamics 36(1987)211

A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41 (1988)55

Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)1

A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125

Modelling nitrate removal by riparian vegetation in a springfed stream: the influence of land-use practices 42(1988)179

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

A multi-species model for rangeland plant communities 44(1988)89

A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231

Verification of the mathematical model of nitrogen circulation with and without light access 46(1989)135

Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989) 303

Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83

A study on solute $\text{NO}_3\text{-N}$ transport in the hydrologic response by an MRF model 48(1989)159

Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48(1989)221

Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989) 7

Nonlinear programming - general

A nonlinear programming approach to the analysis of perturbed marine ecosystems under model parameter uncertainty 35(1987)1

Nutrient loading

Submodels for the nutrient loading estimation on river Zala 26(1984)115

Nutrients

Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149

Validation of a prognosis based upon a eutrophication model 32(1986)165

Examination of the generality of eutrophication models 32(1986)251

Study and modelling of a simple planktonic system reconstituted in an experimental microcosm 34(1986)61

Modeling nutrient behavior in wetlands 40(1988)37

Robust parameter estimation for nonlinear models 41(1988)41

Characterizing populations as entities in ecosystem models: problems and limitations of mass-balance modeling 42(1988)89

Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103

Okefenokee marshland before, during and after nutrient enrichment by a bird rookery 43(1988)195

A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179

Multiple nutrient limitations in ecological models 46(1989)147

Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989) 303

Nutrition - see feeding and nutrition

Nutrition kinetics

A mathematical model of predation based upon the theory of nutrition kinetics. 2. A nutrition structure of the predator population and its functional response to the prey 40(1988) 67

O

Octopus vulgaris

Application of a formal specification language to animal ecology. I. Environment 50(1990) 205

Oligotrophic ecosystems

Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97

Ecological modelling of a high mountain reservoir in relation to particulate organic matter loading 35(1987)227

Olive trees

A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179

Onion

A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101

Optimality

On optimality in multispecies ecosystems 26 (1984)33

Combinatorial model of ecosystem dynamics 39 (1987)181

Optimization models

Contribution to the theory of adaptation with application to ecology 26(1984)21

Dynamic optimization of combined harvesting of a two-species fishery 41(1988)17

Overlap index

Use of overlap indices as competition coefficients: tests with field data 34(1986)231

Owl

A computer modelling study of the population dynamics of the Screech Owl (*Otus asio*) 30 (1985)105

A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233

Oxygen

A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279

A study on dissolved oxygen budgets in natural and artificial lakes 31(1986)283

A nonparametric method for estimating the joint probability density of BOD and DO 41 (1988)183

Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243

Oyster

Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111

Ozone

A preliminary kinetics model predicting concentration variations of hypobromous acid and bromate in ozonated marine water 29 (1985)315

Models for the physiological effects of short O₃ exposures on plants 30(1985)175

A model for predicting the influence of moisture stress on crop losses caused by ozone 35 (1987)29

Evaluation of an ozone×moisture stress interaction model for soybean 41(1988)269

Products of photo-oxidation as a decisive factor of the new forest decline? - results and considerations 41(1988)281

P

Paleoclimatic reconstructions

ARMA techniques for modelling tree-ring response to climate and for reconstructing variations of paleoclimates 33(1986)149

Pansystems analysis

Pansystems analysis: a new approach to ecosystem modelling 32(1986)227

Pansystems modelling in ecology 47(1989)275

Parameter estimation

An interactive algorithm for the parameter estimation of complex systems and its application to an ecological modelling of an actual Japanese lake 32(1986)85

Parasitism

Host-parasitoid dynamics: effects of the position of density dependence 32(1986)291

A matrix modelling approach to population growth systems involving multiple time delays 34(1986)197

Models of sterile insect releases for populations under attack by parasitoids 36(1987)155

Particle distribution

A simple random path method for the analysis of flow networks 28(1985)165

Patchy environments

On the dynamical behaviour of transition matrix population models 42(1988)61

A new nonlinear model for the growth of age-structured populations living in patchy habitats 43(1988)251

Effect of a singular patch on population persistence in a multi-patch system 43(1988)271

PCB

Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213

Periodicity

A statistical technique for analysis of environmental data containing periodic variance components 32(1986)59

Peromyscus leucopus

Spatial characteristics of habitat patches and population survival 30(1985)297

Pest management

A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101

Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45

Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63

Spatial heterogeneity in yield-pest relationships for crop loss assessment 41(1988)67

RAGHUA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Penisetum americanum* and *P. typhoides* phenology 44(1988)275

A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269

Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177

Pesticides

The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49

A computer modelling study of the population dynamics of the Screech Owl (*Otus asio*) 30(1985)105

Modelling the fate of Mirex and Lindane in Lake Ontario, off the Niagara River mouth 33(1986)13

Kinetic model for degradative processes of pesticides in soil 37(1987)131

Study on rate model of microbial degradation of pesticides in soil 41(1988)75

Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303

Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73

Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233

Phosphorus

Study on the modelling of the behavior of phosphorus released from sediments 31(1986)105

Assessment of the impact of eutrophication control measures on South African impoundments 31(1986)237

Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986)249

A mathematical model of seasonal and spatial variation in phosphorus concentrations in Lake Memphremagog, Quebec 34(1986)143

Correlation of a lake eutrophication model to field experiments 34(1986)167

An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207

Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)1

Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7

Photo-oxidation

Products of photo-oxidation as a decisive factor of the new forest decline? - results and considerations 41(1988)281

Photosynthesis

Models for the physiological effects of short O₃ exposures on plants 30(1985)175

Stand growth model based on carbon uptake and allocation in individual trees 33(1986)205

A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55

A model for the relationship between light intensity and the rate of photosynthesis in phytoplankton 42(1988)199

Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243

Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73

Physiology

A physiologically based continuous-time Markov approach to plant growth modelling in semi-arid woodlands 29(1985)189

A model of the productivity of olive trees under optional water and nutrient supply in desert conditions 45(1989)179

Phytoplankton

Testing of a complex ecological model for shallow water bodies 26(1984)103

Use of logical equivalence in modeling ecological relations of oceanic phytoplankton 27(1985)25

Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113

Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145

Interaction between motile phytoplankton and Langmuir circulation 31(1986)175

Modelling of the lower trophic levels of a marine ecosystem and its example of short-period variations of chlorophyll and nutrient in Harima-nada 32(1986)149

Examination of the generality of eutrophication models 32(1986)251

Simulating the development of chlorophyll maxima in the celtic sea 33(1986)1

Eutrophication model of the Venice Lagoon: statistical treatments of 'in situ' measurements of phytoplankton growth parameters 37(1987)103

Characteristic properties of models for the vertical distribution of phytoplankton under stratification 40(1988)175

Aggregation error: research objectives and relevant model structure 41(1988)157

A model for the relationship between light intensity and the rate of photosynthesis in phytoplankton 42(1988)199

Pine

Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45

Pinus merkusii

Yield prediction models for *Pinus merkusii* plantations in Indonesia 36(1987)181

Plankton

Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97

Modelling of stratified flow and eutrophication in reservoirs 31(1986)133

Study and modelling of a simple planktonic system reconstituted in an experimental microcosm 34(1986)61

A simulation of saltmarsh water column dynamics 36(1987)211

An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207

Parameter uncertainty and the behavior of a size-dependent plankton model 40(1988)85

Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model model using laboratory data 42(1988)1

Application of a guaranteed regression model to trophic interaction in an aquatic system 49(1989)1

Plankton - see also phytoplankton, zooplankton

Plant physiology

Modelling diurnal patterns of leaf water potential in field conditions 33(1986)185

Role of stomatal oscillations on transpiration, assimilation and water-use efficiency of plants 41(1988)27

A model for the effect of photosynthate allocation and soil nitrogen on plant growth 41(1988)55

Use of simulation methods for determining critical leaf water potential for stomatal closure in field conditions 50(1990)133

Plume rise models

Verification of the plume rise/dispersion model USPR: plume rise for single stack emissions 30(1985)209

Plume rise modelling: the effects of including a wind shear and a variable surface roughness 37(1987)269

Pollution - air

Verification of the plume rise/dispersion model USPR: plume rise for single stack emissions 30(1985)209

Dynamics of forest dieback: systems analysis and simulation 34(1986)259

A hybrid model for predicting the distribution of sulphur dioxide concentrations observed near elevated point sources 36(1987)269

Evaluation of an ozone×moisture stress interaction model for soybean 41(1988)269

Products of photo-oxidation as a decisive factor of the new forest decline? - results and considerations 41(1988)281

Pollution – food

- Contaminant uptake by fish and the potential for transfer to humans modelled over time 32 (1986)281

Pollution – general

- The pesticide root zone model (PRZM): a procedure for evaluating pesticide leaching threats to groundwater 30(1985)49
- Environmental-economic models for total emission control of regional environmental pollution – input-output approach 30(1985)163
- Material circulation and growth – with special reference to pollution problems 31(1986)125
- Turnover of accumulating substances in populations with weight-structure 36(1987)195

Pollution – radioactive

- Dispersion of radioactive pollution in surface water 26(1984)145

Pollution – water

- Dispersion of radioactive pollution in surface water 26(1984)145
- A conceptual model of unit-mass response function for nonpoint source pollutant runoff 26 (1984)285
- Rational allocation of monitoring stations in a lake by means of the spline technique 32 (1986)43
- Modeling for estimating representative water conditions in a river basin 32(1986)199
- Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215
- Development of a mathematical eutrophication model of the lagoon of Venice 37(1987)1
- A two-dimensional diffusion model of the Venice Lagoon and relative open boundary conditions 37(1987)21
- An advection-diffusion pollution model of the lagoon of Venice 37(1987)47

- Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59

- Tidal three-dimensional diffusion in a model of the lagoon of Venice and reliability conditions for its numerical integration 37(1987)81

- Simulation of marine ecosystem effects due to PCB waste incineration in the Gulf of Mexico 38(1987)213

- Potential importance of spatial and temporal heterogeneity in pH, Al and Ca in allowing survival of a fish population: a model demonstration 41(1988)1

- A nonparametric method for estimating the joint probability density of BOD and DO 41 (1988)183

- A numerical mixing zone model for water quality assessment in natural streams: conceptual development 42(1988)233

- Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111

- Application of an inverse approach to a Canadian radioactive waste disposal site 46(1989)195

- Simulation modelling of the coastal waters pollution from agricultural watershed 49(1989)7

- Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49

Pond

- A computer simulation model of the solar-algae pond ecosystem 34(1986)1

POPCYCLE

- Life history and population dynamics of *Metridia pacifica*: results from simulation modelling 48(1989)113

Population dynamics

- Modelling dynamics and optimal exploitation of the population of the deer *Cervus nippon* 26(1984)41

- Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97
- Simulating the spatiotemporal dynamics of the cereal leaf beetle in a regional crop system 30 (1985)83
- A computer modelling study of the population dynamics of the Screech Owl (*Otus asio*) 30 (1985)105
- Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145
- A simulation model of population dynamics of the codling moth, *Cydia pomonella* 30(1985) 247
- A simulation model for the management of vicuña populations 30(1985)275
- Population dynamics of 'red tide' organisms in eutrophicated coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145
- A systems approach to research and simulation of insect pest dynamics in the onion agro-ecosystem 33(1986)101
- Use of a computer simulation model to evaluate a plant disease biocontrol agent 35(1987)45
- Use of Bose-Einstein statistics in population dynamics models of arthropods 36(1987)89
- Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37 (1987)139
- A transition matrix model of seasonal changes in mite populations 37(1987)167
- A model of the productivity of the mallard duck 38(1987)257
- Models of the development of spatial pattern of an even-aged plant population over time 39 (1987)45
- A mathematical model of the population dynamics of the lesser cornstalk borer, *Elasmopalpus lignosellus* 39(1987)269
- Population dynamics of the forest tent caterpillar (*Malacosoma disstria*) in a water tupelo (*Nyssa aquatica*) forest: a simulation model 39(1987)287
- A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- Simulation of fruit fly population dynamics, with particular reference to the olive fruit fly, *Dacus oleae* 40(1988)213
- A computer simulation study of stochastic models to investigate the population dynamics of the Screech Owl (*Otus asio*) under increased mortality 40(1988)233
- Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201
- A harvesting problem in structured population dynamics 41(1988)229
- Stepwise iterative calibration of a multi-species phytoplankton-zooplankton simulation model using laboratory data 42(1988)1
- On the dynamical behaviour of transition matrix population models 42(1988)61
- Population-dynamics theory: the roles of analytical, simulation, and supercomputer models 43(1988)111
- Effect of boundary conditions, region length, and diffusion rates on a spatially heterogeneous predator-prey system 43(1988)235
- Animal population dynamics: identification of critical components 44(1988)253
- RAGHUA: a computer simulation of *Raghuva albipunctella* population dynamics, and *Penisetum americanum* and *P. typhoides* phenology 44(1988)275
- BEEPPOP: a honeybee population dynamics simulation model 45(1989)133
- A demographic simulator with deeply coupled semantic and numeric data structures 46 (1989)35
- Is *Acanthaster planci* a near-optimal predator? 46(1989)239
- A transition matrix model of European red mite (*Panonychus ulmi*) population dynamics in a managed apple orchard 46(1989)269
- Extreme event risk analysis for age-structured populations 47(1989)175

- Application of a diffusion model to the spread of an invasive species: the coypu in Great Britain 47(1989)217
- Modelling insect populations affected by pesticides with application to pesticide efficacy trials 47(1989)233
- Pansystems modelling in ecology 47(1989)275
- Life history and population dynamics of *Metridia pacifica*: results from simulation modelling 48(1989)113
- A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137
- Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 48(1989)291
- Simulation modelling of the effects of oil spills on population dynamics of northern fur seals 49(1989)49
- Dipodomys* populations as energy-processing systems: regulation, competition, and hierarchical organization 50(1990)157
- Simulation of cotton rat population dynamics and response to rodenticide applications in Florida sugarcane 50(1990)177
- Population persistence**
- Effect of a singular patch on population persistence in a multi-patch system 43(1988)271
- Population regulation**
- Simulation of the potential for life history components to regulate walleye population size 45(1989)27
- Potato**
- A simulation model of the fungus *Phytophthora infestans* (Mont) de Bary 28(1985)121
- Prey-predator relationships**
- Influence of territoriality on the stability and coexistence of competing predators - a simulation study 27(1985)95
- A mathematical model of predation based upon the theory of nutrition kinetics 28(1985)155
- A general model of population growth in the hyrax *Procavia capensis* 34(1986)115
- A transition matrix model of seasonal changes in mite populations 37(1987)167
- A ration-based model of a seaweed-sea urchin community 37(1987)249
- A recent increase in jellyfish populations: a predator-prey model and its implications 38(1987)243
- On structural control strategies in aquatic ecosystems 39(1987)171
- A transition matrix model of the population dynamics of a two-prey-two-predator acarid complex 39(1987)307
- A mathematical model of predation based upon the theory of nutrition kinetics. 2. A nutrition structure of the predator population and its functional response to the prey 40(1988)67
- Alternative prey that decreases vole population cyclicity: a simulation study based on field data 40(1988)265
- Modelling density-dependent aggregation and reproduction in certain terrestrial and marine ecosystems: a comparative study 41(1988)219
- Use of logistic regression in modelling prey selection by *Neomysis mercedis* 43(1988)225
- Effect of boundary conditions, region length, and diffusion rates on a spatially heterogeneous predator-prey system 43(1988)235
- Simulation of the potential for life history components to regulate walleye population size 45(1989)27
- Is *Acanthaster planci* a near-optimal predator? 46(1989)239
- Lotka-Volterra prey-predator model with harvesting and environmental perturbations 47(1989)283
- Predation in food webs 48(1989)267
- Acanthaster planci* outbreak initiation: a starfish-coral site model 49(1989)153

Production - general

Estimation of marine production from size spectrum 42(1988)33

Production - plankton

Parameter uncertainty and the behavior of a size-dependent plankton model 40(1988)85

Production - primary

Model use and verification of ecological parameters for an oligotrophic lake (Lake Stechlin, G.D.R.) 26(1984)97

Testing of a complex ecological model for shallow water bodies 26(1984)103

Theoretical limits of belowground production by *Spartina alterniflora*: an analysis through modelling 26(1984)155

Estimating aboveground net primary production in grasslands: a simulation approach 33(1986)297

Modeling the effects of mining and erosion on biomass production 35(1987)85

A parameter-based method for modelling biomass accumulations in forest stands: theory 36(1987)29

A parameter-based method for modelling biomass accumulations in forest stands: an application 36(1987)49

Impact of the hydrodynamic conditions on the primary production in an impounded river 39(1987)227

A general model of forest ecosystem processes for regional applications. I. Hydrologic balance, canopy gas exchange and primary production processes 42(1988)125

Bias in estimates of primary production: an analytical solution 44(1988)43

Modelling photosynthesis and oxygen in a shallow, hypertrophic lake 45(1989)243

Simulated carbon and nitrogen dynamics in blue grama swards subject to above- and belowground grazing, irrigation and fertilization. Part II. The grazing optimization notion 48(1989)83

Response of alpine tundra to a changing climate: a hierarchical simulation model 49(1989)205

An approximate formula for the daily photo-production of forest tree canopies 49(1989)297

Production economy

Classical roots for a modern materials-energy analysis 38(1987)75

Prolog

The use of prolog for improving the rigour and accessibility of ecological modelling 46(1989)9

Ptinus tectus

Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 42(1989)291

Q**Quasilinearization**

Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191

R**Rabies**

Estimation of two epidemiological parameters of fox rabies: the length of incubation period and the dispersion distance of cubs 33(1986)123

Radiation flux

Modelling the seasonal variation of net all-wave radiation flux and evaporation in a tropical wet-dry region 39(1987)247

Relationship between radiation interception and photosynthesis in forest canopies: effect of stand structure and latitude 49(1989)73

Radiation input

Simulation of within-tree and between-tree shading of direct radiation in a forest canopy: effect of crown shape and sun elevation 49(1989)89

An approximate formula for the daily photo-production of forest tree canopies 49(1989)297

Radioactivity

Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides 28(1985)243

Development and Monte Carlo analysis of an oyster bioaccumulation model applied to biomonitoring data 45(1989)111

Application of an inverse approach to a Canadian radioactive waste disposal site 46(1989)195

RAGHUVA

RAGHUVA: a computer simulation of *Raghuva albiguttata* population dynamics, and *Penaeus americanus* and *P. typhoides* phenology 44(1988)275

Rainfall

Rainfall risk in grazing management 41(1988)85

A theoretical model of the process of rainfall interception in forest canopy 42(1988)111

A simple water balance daily rainfall-runoff model with application to the tropical Magela Creek catchment 42(1988)245

Herbage production of a mediterranean grassland in relation to soil depth, rainfall and nitrogen nutrition: a simulation study 47(1989)303

RAINS

Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231

Rangeland ecosystems

Sensitivity analysis of a general rangeland model 29(1985)57

A multi-species model for rangeland plant communities 44(1988)89

An expert system for a rangeland simulation model 46(1989)91

Red tide

Population dynamics of 'red tide' organisms in eutrophic coastal waters - numerical experiment of phytoplankton bloom in the East Seto Inland Sea, Japan 31(1986)145

Reductionism

Reductionism and related methodological problems in ecological modelling 34(1986)289

Regression models - general

Application of a guaranteed regression model to trophic interaction in an aquatic system 49(1989)1

Reliability analysis

Estimating model reliability using data with uncertainty 41(1988)169

Remote sensing

A microcomputer system for remotely sensed image data on ecological environments 32(1986)15

A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105

Use of remotely-sensed information in agricultural crop growth models 41(1988)247

Renewable resources

A comment on linear control problems in the theory of renewable resource exploitation 30(1985)309

A bioeconomic model of harvesting a multi-species fishery 32(1986)267

Regional development and renewable resource exploitation 37(1987)303

Reservoirs

Simulating fish redistribution in the LG-2 reservoir after flooding 28(1985)97

A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279

Evaluation of a water quality model (CE-QUAL-R1) using data from a small Wisconsin reservoir 29(1985)303

Modelling of stratified flow and eutrophication in reservoirs 31(1986)133

Assessment of the impact of eutrophication control measures on South African impoundments 31(1986)237

Ecological modelling of a high mountain reservoir in relation to particulate organic matter loading 35(1987)227

An ecosystem model of phosphorus cycling in a warm monomictic, hypertrophic impoundment 37(1987)207

Residence time

Residence time in constant compartmental ecosystems 32(1986)243

Energy intensity, residence time, exergy, and ascendancy in dynamic ecosystems 48(1989)19

Resilience

An ecological model of resilient decision making: an application to the study of public and private sector decision making in Japan 38(1987)141

Resource management

Interdependence of ecological risk and economic profit in the exploitation of renewable resources 28(1985)201

Spatial characteristics of habitat patches and population survival 30(1985)297

A comment on linear control problems in the theory of renewable resource exploitation 30(1985)309

Regional development and renewable resource exploitation 37(1987)303

Resource constraints: the need for community management in economic development strategies 38(1987)159

Integration of resource economics and ecology 38(1987)171

Artificial intelligence and expert systems in ecology and natural resource management 46(1989)3

Transferring scientific knowledge to natural resource managers using artificial intelligence concepts 46(1989)73

Revegetation

A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105

Rice weevil

Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303

River ecosystems

Modelling the impacts of a river diversion on bottomland forest communities in the Santee

River floodplain, South Carolina 29(1985)
283

Nutrient and trace metal fluxes in the Magela
Creek System, Northern Australia 31(1986)
249

Analysis and cartographical approach to the
regional water utilization system in the Yodo
River basin 31(1986)315

Effect of seawater on nitrification by attached
biofilm 32(1986)183

Modeling for estimating representative water
conditions in a river basin 32(1986)199

Impact of the hydrodynamic conditions on the
primary production in an impounded river 39
(1987)227

A nonparametric method for estimating the
joint probability density of BOD and DO 41
(1988)183

Probability distribution for critical DO location
in streams 42(1988)45

Modelling nitrate removal by riparian vegeta-
tion in a springfed stream: the influence of
land-use practices 42(1988)179

A numerical mixing zone model for water qual-
ity assessment in natural streams: conceptual
development 42(1988)233

Determination of the critical locations in a
stochastic stream environment 45(1989)43

Rusty grain beetle

A simulation model of population dynamics of
the rusty grain beetle, *Cryptolestes ferrugi-
neus* in stored wheat 48(1989)137

S

Salinity

Managing salinity through conjunctive use of
water resources 40(1988)11

A rule-based ecological model for the manage-
ment of an estuarine lake 46(1989)107

SALMO

A comprehensive sensitivity analysis for an eco-
logical simulation model 26(1984)77

Model use and verification of ecological param-
eters for an oligotrophic lake (Lake Stechlin,
G.D.R.) 26(1984)97

Analysis of structural stability of aquatic
ecosystems as an aid for ecosystem control
27(1985)221

Model-assisted evaluation of alternative hy-
potheses to explain the self-protection mech-
anism of lakes due to calcite precipitation 39
(1987)59

Satellite concept

A satellite design for integrated regional envi-
ronmental modelling 35(1987)137

SCEMR1

A soil solute transport model evaluated on two
experimental systems 37(1987)191

Sea urchin

A ration-based model of a seaweed-sea urchin
community 37(1987)249

Seal

A simulation model of seasonal migration and
daily movements of the northern fur seal 48
(1989)193

Simulation modelling of the effects of oil spills
on population dynamics of northern fur seals
49(1989)49

Seasonality

A mathematical model of seasonal and spa-
tial variation in phosphorus concentrations in
Lake Memphremagog, Quebec 34(1986)143

Fishery management implications of recruitment seasonality: simulation of the Texas fishery for the brown shrimp, *Penaeus aztecus* 36(1987)239

Seasonal changes of drone numbers in a colony of the honeybee, *Apis mellifera* 37(1987)155

A transition matrix model of seasonal changes in mite populations 37(1987)167

Modelling the seasonal variation of net all-wave radiation flux and evaporation in a tropical wet-dry region 39(1987)247

A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231

A simulation model of seasonal migration and daily movements of the northern fur seal 48(1989)193

Model of the seasonal and perennial carbon dynamics in deciduous-type forests controlled by climatic variables 49(1989)101

Seaweed

A ration-based model of a seaweed-sea urchin community 37(1987)249

Sediments

Particle sedimentation in the ocean 30(1985)229

Study on the modelling of the behavior of phosphorus released from sediments 31(1986)105

Model-assisted evaluation of alternative hypotheses to explain the self-protection mechanism of lakes due to calcite precipitation 39(1987)59

Seed dispersal

Seed dispersal from vegetation islands 32(1986)301

Semi-desert ecosystems

Optimal stocking for semi-desert range: a catastrophe theory model 27(1985)285

Sensitivity analysis

A comprehensive sensitivity analysis for an ecological simulation model 26(1984)77

Sensitivity analysis of the asymptotic behavior of a model for the environmental movement of radionuclides 28(1985)243

A simulation model of carbon and oxygen dynamics in a reservoir 28(1985)279

Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353

Development and global sensitivity analysis of a closed ecosystem model 30(1985)13

Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37(1987)139

Simplified sensitivity analysis applied to a nutrient-biomass model 42(1988)103

Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165

Temporal sensitivity of *Aphanizomenon flos-aquae* dominance - a whole-lake simulation study with input perturbations 43(1988)137

Animal population dynamics: identification of critical components 44(1988)253

BEEPOP: a honeybee population dynamics simulation model 45(1989)133

Sensitivity of cycling measures derived from ecological flow analysis 48(1989)45

Sensitivity coefficients

Sensitivity coefficients - a reply to Huson 27(1985)153

Sessile colonial invertebrates

Competitive overgrowth interactions among sessile colonial invertebrates: a comparison of stochastic and phenotypic variation 27(1985)299

Chthamalus bisinuatus (Cirripedia) and *Brachidontes solisianus* (Bivalvia) spatial interactions: a stochastic model 34(1986)99

Sewage treatment

Mathematical model of sewage treatment plant operation 39(1987)67

Sex ratio

Is there an optimal sex ratio for insect mass rearing? 45(1989)205

Shading

Stand development of mixtures of species with varying tolerances to shade 30(1985)71

Size distribution dynamics of plants with interaction by shading 33(1986)173

Shrimp

A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275

Fishery management implications of recruitment seasonality: simulation of the Texas fishery for the brown shrimp, *Penaeus aztecus* 36(1987)239

Forecasting commercial harvest of marine shrimp using a Markov chain model 43(1988)183

Shrubland ecosystems

Simulation of competition between alternative shrub life history strategies through recurrent fires 27(1985)271

A stochastic-deterministic simulation model of shrub succession 29(1985)35

A population model for a long-lived, resprouting chaparral shrub: *Adenostoma fasciculatum* 34(1986)245

Size spectrum

Estimation of marine production from size spectrum 42(1988)33

SKEBUB

Application of multi- and univariate techniques of sensitivity analysis to SKEBUB, a biomass-based fisheries ecosystem model, parameterized to Georges Bank 29(1985)353

Sociology

A sociobioeconomic model: the Texas inshore shrimp fishery 35(1987)275

Socio-economic systems as causal factors in the dynamics of ecosystems 46(1989)305

Soil ecosystems

Acidification of forest soils: model development and application for analyzing impacts of acidic deposition in Europe 33(1986)231

Modeling soil erosion, transport and deposition 33(1986)255

Kinetic model for degradative processes of pesticides in soil 37(1987)131

A soil solute transport model evaluated on two experimental systems 37(1987)191

Cation depletion rate as a measure of soil sensitivity to acidic deposition: theory 40(1988)25

Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73

A general analytical model of the process of humus mineralization and accumulation in soil 44(1988)209

A simulation model of intraseasonal carbon and nitrogen dynamics of blue grama swards as influenced by above- and belowground grazing 44(1988)231

An evaluation of the state factor model of soil ecosystems 45(1989)165

A computer model of the solar radiation, soil moisture, and soil thermal regimes in boreal forests 45(1989)275

Evaluation - by cluster analysis - of descriptors for the establishment of significant subunits in Antarctic soils 50(1990)79

SPECOM - a single tree model of pine stand/
raw humus soil ecosystem 50(1990)107

Solar radiation

A computer model of the solar radiation, soil
moisture, and soil thermal regimes in boreal
forests 45(1989)275

SONCHES

Concept and usage of the interactive simulation
system for ecosystems SONCHES 26(1984)
51

Investigations of the lake ecosystem model
EMSY by means of the simulation system
SONCHES 41(1988)193

Soybean

A model for predicting the influence of moisture
stress on crop losses caused by ozone 35
(1987)29

Evaluation of an ozone \times moisture stress inter-
action model for soybean 41(1988)269

Spartina alterniflora

Theoretical limits of belowground production
by *Spartina alterniflora*: an analysis through
modelling 26(1984)155

Spatial dynamics

A probabilistic model of the relationship be-
tween marshland-water interface and marsh
disintegration 29(1985)245

Dynamic spatial simulation modeling of coastal
wetland habitat succession 29(1985)261

A mathematical model of seasonal and spa-
tial variation in phosphorus concentrations in
Lake Memphremagog, Quebec 34(1986)143

Spatial interactions

Chthamalus bisinuatus (Cirripedia) and *Brachi-
dontes solisianus* (Bivalvia) spatial interac-
tions: a stochastic model 34(1986)99

Spatial patterns

Ecological field theory: a spatial analysis of
resource interference among plants 29(1985)
215

Simulating the spatiotemporal dynamics of the
cereal leaf beetle in a regional crop system 30
(1985)83

Spatial characteristics of habitat patches and
population survival 30(1985)297

Cereal leaf beetle spatial dynamics: simulations
with a random diffusion model 33(1986)89

Random field modelling of spatial variations in
erosion and deposition in flat alluvial land-
scapes in arid central Australia 33(1986)269

A statistical physics approach to nearest neigh-
bor distribution for individuals of finite size
36(1987)73

Simulation of two-dimensional point patterns:
application of a lattice framework approach
38(1987)299

Models of the development of spatial pattern of
an even-aged plant population over time 39
(1987)45

Estimating and constructing confidence inter-
vals for spatial patterns between random and
regular 44(1988)57

A method of detecting departure from random-
ness in plant communities 46(1989)261

Methods to evaluate the performance of spatial
simulation models 48(1989)1

Species diversity

Economics as mechanics and the demise of bi-
ological diversity 38(1987)107

Specification languages

Application of a formal specification language
to animal ecology. I. Environment 50(1990)
205

Spline technique

Rational allocation of monitoring stations in
a lake by means of the spline technique 32
(1986)43

SPRUCE

Dynamics of forest dieback: systems analysis and simulation 34(1986)259

Spruce

Generic simulation model of forest growth, carbon and nitrogen dynamics, and application to tropical acacia and European spruce 48 (1989)221

SPUR

Sensitivity analysis of a general rangeland model 29(1985)57

A multi-species model for rangeland plant communities 44(1988)89

An expert system for a rangeland simulation model 46(1989)91

Squirrel

Mathematical model for dynamics of the number of pelt products from the local population of Manchurian squirrels 30(1985)145

Stability

The problem of ecosystem stability and some applications of one of the stochastic methods in investigation of this problem 28(1985)311

Dynamics and stability of ecological models 32 (1986)95

Stability and instability of an adaptive resource replacement strategy in an agroecological production system 35(1987)165

Stability of natural communities: loop analysis and computer simulation approach 40(1988) 131

Starfish

Is *Acanthaster planci* a near-optimal predator? 46(1989)239

Acanthaster planci outbreak initiation: a starfish-coral site model 49(1989)153

Sterile insect release method

Models of sterile insect releases for populations under attack by parasitoids 36(1987)155

Stochasticity

Ecosystems stochasticity model 28(1985)217

Stored products

A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137

Simulated population dynamics of a stored-products' pest (*Ptinus tectus*, Coleoptera) 48 (1989)291

Stormwater management

Applied carrying capacity concept for integrating stormwater management and land use planning, a case study: the Kuantu Plain of Taipei, Taiwan 33(1986)35

Structural dynamics

Form-building potencies of photons and the structural dynamics of ecosystems 28(1985) 139

Structural dynamic model 31(1986)1

Submodelling

Submodels for the nutrient loading estimation on river Zala 26(1984)115

Succession

Simulation of species replacement on environmental gradient in the course of ecological succession 26(1984)45

Simulation of competition between alternative shrub life history strategies through recurrent fires 27(1985)271

A stochastic-deterministic simulation model of shrub succession 29(1985)35

Dynamic spatial simulation modeling of coastal wetland habitat succession 29(1985)261

Modelling the impacts of a river diversion on bottomland forest communities in the Santee River floodplain, South Carolina 29(1985)283

A stochastic model for describing revegetation following forest cutting: an application of remote sensing 32(1986)105

Extinction time of a sample of Karst pastures due to bush encroachment 33(1986)85

Impact of gypsy moth infestation on forest succession in the North Carolina Piedmont: a simulation study 35(1987)63

Analysis of forest succession with fuzzy graph theory 45(1989)261

A gap dynamics simulation model of succession in a semiarid grassland 49(1989)229

Sulphur

A hybrid model for predicting the distribution of sulphur dioxide concentrations observed near elevated point sources 36(1987)269

Sustainable societies

Foundations of an ecological economics 38(1987)9

Neoclassical economics and principles of sustainable development 38(1987)19

T

Table response

Analysis of life table response experiments.
I. Decomposition of effects on population growth rate 46(1989)221

Technology

Theory and model or art and technology in ecology 50(1990)213

Temperature

Heterotrophic bacterial activity in coastal waters: functional relationship of temperature and phytoplankton population 28(1985)113

Numerical analysis of forest temperature. I. Diurnal variations 33(1986)315

Numerical analysis of forest temperature. II. Seasonal variations 33(1986)329

A simple model for rapidly computing terrestrial flux, solar flux and global mean surface temperature 35(1987)189

Nonlinearity and the effects of microclimatic variability on a codling moth population (*Cydia pomonella*): a sensitivity simulation 37(1987)139

Temperature manipulation and the management of insecticide resistance in stored grain pests: a simulation study for the rice weevil, *Sitophilus oryzae* 43(1988)303

Modeling the transport and the fate of pesticides in the unsaturated zone considering temperature effects 44(1988)73

A computer model of the solar radiation, soil moisture, and soil thermal regimes in boreal forests 45(1989)275

TERPED

A methodology for deriving model input parameters from a set of environmental data 40(1988)155

Territoriality

Influence of territoriality on the stability and coexistence of competing predators - a simulation study 27(1985)95

Theoretical models - general

Foreword 43(1988)1

Theory and models in ecology: a different perspective 43(1988)33

On the importance of higher-level models in ecology 43(1988)45

Strategies and difficulties of applying models to aquatic populations and food webs 43(1988) 57

Changing criteria for imposing order 43(1988) 75

Population-dynamics theory: the roles of analytical, simulation, and supercomputer models 43(1988)111

What constitutes a good model and by whose criteria? 43(1988)125

Nature of ecological theories 43(1988)129

Role of models in ecology 43(1988)133

Thermodynamics

Thermodynamics of accumulation processes applied to ecological modelling 26(1984)17

Structural dynamic model 31(1986)1

Entropy balance in Lake Biwa 37(1987)235

Biophysical economics: historical perspective and current research trends 38(1987)47

Two approaches to generalized ecosystem modelling: thermodynamic and cybernetic 39 (1987)161

Use of models as experimental tool to show that structural changes are accompanied by increased exergy 41(1988)117

Entropy laws in ecological networks at steady state 42(1988)289

Hological study of lakes from an entropy viewpoint - Lake Mendota 45(1989)81

Three/two power law

The '3/2 power law': a comment on the specific constancy of K 45(1989)237

Tidal velocity

Steady-state achievement by introduction of true tidal velocities on a pollution model of the Venice Lagoon 37(1987)59

Tilapia

A computer simulation model of the solar-algae pond ecosystem 34(1986)1

TIME-ZERO

TIME-ZERO: the integrated modeling environment 47(1989)33

Toxicology

Basin-wide ecological fate model for management of chemicals hazard 31(1986)267

Effects of toxicants on populations: a qualitative approach IV. Resource-consumer-toxicant models 35(1987)249

A model illustrating the environmental fate, exposure and human uptake of persistent organic chemicals 47(1989)85

Exposure and ecotoxicity estimation for environmental chemicals (E4CHEM): application of fate models for surface water and soil 47 (1989)115

Transition matrix

On the dynamical behaviour of transition matrix population models 42(1988)61

Trophic functions

Iterative approximation of trophic functions 40 (1988)1

Tumour growth

Methodological aspects of modelling tumor growth and treatment 32(1986)191

Tundra

Response of alpine tundra to a changing climate: a hierarchical simulation model 49 (1989)205

U

Uncertainty analysis

Using sensitivity and uncertainty analyses to improve predictions of broad-scale forest development 42(1988)165

Uranium

Nutrient and trace metal fluxes in the Magela Creek System, Northern Australia 31(1986)249

V

Validation

Validation of a prognosis based upon a eutrophication model 32(1986)165

Vegetation dynamics

Projecting regional area changes in forestland cover in the U.S.A. 29(1985)27

Vicuña

A simulation model for the management of vicuña populations 30(1985)275

Vole

Alternative prey that decreases vole population cyclicity: a simulation study based on field data 40(1988)265

W

Walleye

Simulation of the potential for life history components to regulate walleye population size 45(1989)27

Water

Interaction between motile phytoplankton and Langmuir circulation 31(1986)175

Water - see also drinking water

Water budget models

A water budget model for the tropical magela flood plain 46(1989)165

Water column dynamics

A simulation of saltmarsh water column dynamics 36(1987)211

Water dynamics

Water transfer from soil through plants to the atmosphere in willow energy forest 26(1984)251

A soil-plant-water model with a case study in a forested catchment 27(1985)235

Fast graphical simulations of spills and plumes for application to the great lakes 47(1989)161

Water quality

Evaluation of a water quality model (CE-QUAL-R1) using data from a small Wisconsin reservoir 29(1985)303

Study on the modelling of the behavior of phosphorus released from sediments 31(1986)105

Modelling of stratified flow and eutrophication in reservoirs 31(1986)133

Three-dimensional water-quality-transport model compared with field observations 31(1986)185

On the box model for prediction of water-quality in eutrophic lakes 31(1986)221

Assessment of the impact of eutrophication control measures on South African impoundments 31(1986)237

Cost analysis of the adverse effects of algal growth in water bodies on drinking water supply 31(1986)303

Modeling for estimating representative water conditions in a river basin 32(1986)199

Trihalomethane levels in chlorinated Michigan drinking water 32(1986)215

Effects of load reductions on the water quality of a large shallow lake 39(1987)85

Probability distribution for critical DO location in streams 42(1988)45

A numerical mixing zone model for water quality assessment in natural streams: conceptual development 42(1988)233

MINLAKE: a dynamic lake water quality simulation model 43(1988)155

Water resources

Analysis and cartographical approach to the regional water utilization system in the Yodo River basin 31(1986)315

Managing salinity through conjunctive use of water resources 40(1988)11

Watershed

Hydrological modeling of acidified Canadian watersheds 50(1990)5

Wetland ecosystems

Articulation - accuracy and effectiveness of mathematical models: a review of freshwater wetland applications 27(1985)45

Stability of artificially-drained lowlands: a theoretical assessment 27(1985)69

A probabilistic model of the relationship between marshland-water interface and marsh disintegration 29(1985)245

Dynamic spatial simulation modeling of coastal wetland habitat succession 29(1985)261

Modeling nutrient behavior in wetlands 40(1988)37

Okefenokee marshland before, during and after nutrient enrichment by a bird rookery 43(1988)195

Whale

Numerical models of bowhead and gray whale migration in Alaskan waters 44(1988)1

Wheat

A simulation model of population dynamics of the rusty grain beetle, *Cryptolestes ferrugineus* in stored wheat 48(1989)137

Willow

Water transfer from soil through plants to the atmosphere in willow energy forest 26(1984)251

Wind

Plume rise modelling: the effects of including a wind shear and a variable surface roughness 37(1987)269

World Bank

Neoclassical economics and principles of sustainable development 38(1987)19

Y

Yeast

Parameter estimation of a nonlinear population model with two parameters, growth of a yeast population as an example 34(1986)191

Z

Zooplankton

The law of congruous attraction and the structure of zooplankton communities 34(1986)83

Interactions between algae and zooplankton in a continuous cultivation system 39(1987)33

Effect of power plant entrainment on the population dynamics of the bay anchovy (*Anchoa mitchilli*) 41(1988)201

Bioenergetic model for the analysis of the ontogenetical aspects of coregonid fish growth 44(1988)195

Methods to evaluate the performance of spatial simulation models 48(1989)1

Environmental Models: Emissions and Consequences

Risø International Conference, Denmark, 22-25 May, 1989
(sponsored by the Commission of the European Communities)

edited by J. Fenhann, H. Larsen, G.A. Mackenzie and B. Rasmussen,
Risø National Laboratory, Systems Analysis Department, Roskilde, Denmark

Contents:

- I. **Introduction.** Welcome address (J. Kjems). Address by F. Van Scheepen, Commission of the European Communities.
- II. **Emissions.** Proposal for an international emission inventory for Western European countries (F. Brieda). The CORINAIR project - an EC air pollutant inventory (J.P. Fontelle *et al.*). Emission of air pollutants in Italy: state of the art (M.C. Cirillo *et al.*). An air pollution index for environmental management (T. Kallaste).
- III. **Economics.** Cost considerations on CO₂ abatement (Y. Smeets, D. Gusbin). Emission inventories and cost effectiveness analysis, the base for sound environmental control policies - the experience in Baden-Württemberg (R. Friedrich, A. Voss). Some macroeconomic consequences of emissions to air (S. Glomsrød). Financial control over socio-economic damage in region's economic-ecological model (S. Jackus, V. Navickas).
- IV. **Emissions and Short-Range Effects.** Local breeze effect on the emission atmospheric diffusion in the industrial area of Genoa (Italy) (R. Festa *et al.*). Air pollution around Cheminova (F. Andersen). A simulation computer model for evaluating air quality (P. Holnicki). Air pollution information system - tool for desk-top air pollution management on a local scale (H.P. Baars *et al.*).
- V. **Biological Effects.** Assessing impact of climatic change on crop production using growth models (J.E. Olesen). Quantitative relationship between air pollutant exposures and effects on plant growth and yield (H. Ro-Poulsen *et al.*). Stress consequences of technological emissions (J. Pop-Jordanov, N. Pop-Jordanov). Recent development in structural dynamic models (S.N. Nielsen).
- VI. **Energy and Environmental Planning.** A study on reducing environmental emissions from energy system - a milestone towards consequence free (T. Nagano *et al.*). The greenhouse effect as an uncertainty in energy planning: case study Sweden (T. Larsson, C.O. Wene). Technical options for a stringent clean air concept in Switzerland (S. Kypros). Implementation of MARKAL-Quebec energy model with emissions factors, abatement technologies and SO₂ constraints (C. Beazer *et al.*). Integrated energy and environmental planning (E. Bernsen *et al.*). Energy and environment: optimal control strategies for reducing emissions from energy production and energy use (O. Rentz *et al.*). A model for analysing environment driven investments in the Danish space heating sector (L.H. Nielsen, P.S. Christensen). The new Italian energy plan: assessing the effect of different regulatory scenarios on the reduction of air pollutant emissions generated by fossil fuels (G.C. Pinchera *et al.*). SESAM-Denmark - sustainable energy systems analysis model (K. Illum). CO₂ emissions and ways of restructuring energy supplies in the FRG in view of goals stipulated at the "Toronto Conference" (H.J. Wagner). Environmental information and planning model "RIM" (R. Thomas *et al.*).
- VII. **Aquatic Systems.** A general model for the heavy metal pollution of aquatic ecosystems (S.E. Jørgensen). Disposal of residues from electricity production. Practical application of a mathematical model to predict the impacts on ground water quality (B. Donslund, P.B. Eriksen). Modelling approach to the evaluation of the dynamic of SO₂-4 concentration in Lake Peipsi (V. Krysanova).
- VIII. **Terrestrial Systems.** Overview on non point pollution models: experiences and applications (G. Bendricchio, M. Malagoli). Model of ion dynamics and acidification of soil: simulating recovery of base saturation (M. Holmberg). The modelling and data analysis framework for the Baltic Sea region ecosystem (K. Brodersen *et al.*).
- IX. **Integrated Models.** Characterizing uncertainty in integrated environmental models (E.S. Ruben). Effect of uncertainty in source-receptor relationships on transboundary air pollution control strategies (R.W. Shaw, M. Amann). Use of connected models in societal decision-making - a Danish study of the greenhouse effect (J. Fenger, J.E. Olesen). Critical loads concept and its application with novel optimisation techniques to environmental acidification in Europe (R.G. Derwent). Comparison of forest soil acidification estimates in different energy use and emission control scenarios (M. Johansson *et al.*). Integrated modeling in The Netherlands (T.N. Olsthoorn *et al.*).
- X. **List of Participants.**

1990 500 pages
US\$ 100.00 / Dfl 195.00
ISBN 0-444-88609-5



Elsevier Science Publishers

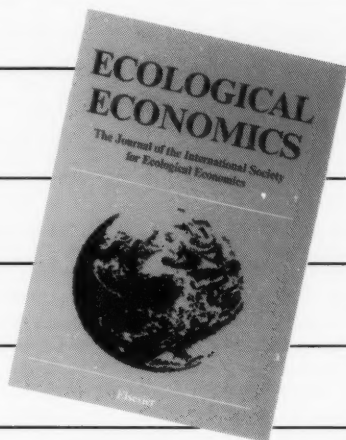
P.O. Box 211, 1000 AE Amsterdam, The Netherlands
P.O. Box 882, Madison Square Station, New York, NY 10159, USA

ECOLOGICAL ECONOMICS

Journal of the International

Society for Ecological

Economics (ISEE)



Editor-in-Chief:

Robert Costanza, *Solomons, MD, USA*

Associate Editors:

Herman Daly, *Washington, DC, USA;*

Ann-Mari Jansson, *Stockholm, Sweden;*

David Pearce, *London, UK*

Concerned with extending and integrating the study and management of "nature's household" (ecology) and "mankind's household" (economics). This integration is necessary because conceptual and professional isolation have led to economic and environmental policies which are mutually destructive rather than reinforcing in the long term. The journal is transdisciplinary in spirit and methodologically open. Specific research areas covered include: valuation of natural resources, sustainable agriculture and development, ecologically integrated technology, integrated ecologic-economic modelling at scales from local to regional to global, implications of thermodynamics for economics and ecology, renewable

resource management and conservation, critical assessments of the basic assumptions underlying current economic and ecological paradigms and the implications of alternative assumptions, economic and ecological consequences of genetically engineered organisms, and gene pool inventory and management.

Submission of Articles:

Manuscripts should be submitted to the Editorial Secretariat of *Ecological Economics*, P.O. Box 330, 1000 AH Amsterdam, The Netherlands. A detailed Guide for Authors is available on request and is printed in the first issue to appear in each year's subscription.

ECOLOGICAL ECONOMICS HAS NO PAGE CHARGES

Subscription Information:

1990: Vol. 2 (4 issues)
US\$ 134.00 / Dfl. 268.00
ISSN 0921-8009

For full details or a free sample copy please contact:

ELSEVIER SCIENCE PUBLISHERS

P.O. Box 330, 1000 AH Amsterdam, The Netherlands
P.O. Box 882, Madison Square Station, New York, NY 10059, USA

The Dutch Guilder price is definitive. US\$ prices are subject to exchange rate fluctuations.

NOTE TO CONTRIBUTORS

Types of paper published in the journal

— papers reporting results of original research — review articles — short communications — (guest) editorials — book reviews — news and announcements.

A detailed *Guide for Authors* is available upon request and is also printed in the first issue to appear each year. You are kindly asked to consult this guide. Please pay special attention to the following notes:

Language

The official language of the journal is English.

Preparation of the text

- (a) The manuscript should include at the beginning an abstract of not more than 400 words.
- (b) It should be typewritten with double spacing and wide margins. Words to be printed in italics should be underlined. SI units should be used throughout.
- (c) The title page should include: the title, the name(s) of the author(s), and their affiliation(s).

References

- (a) References in the text should be cited as the name of the author(s), followed by the year of publication.
- (b) The reference list should be in alphabetical order and on sheets separate from the text.

Tables

Tables should be compiled on separate sheets. A title should be provided for each table and all tables should be referred to in the text.

Illustrations

- (a) All illustrations should be numbered consecutively and referred to in the text.
- (b) Drawings should be fully annotated, the size of the lettering being appropriate to that of the drawings, but taking into account the possible need for reduction in size (preferably not more than 50%). The page format of the journal should be considered when designing drawings.
- (c) Photographs must be of good quality, printed on glossy paper.
- (d) Figure captions should be supplied on a separate sheet.

Proofs

One set of proofs will be sent to the author to be checked for printer's errors. In the case of two or more authors please indicate to whom the proofs should be sent.

Reprints and page charges

There is no page charge. Fifty reprints of each article published will be supplied free of charge. Additional reprints can be ordered on a reprint order form which is included with the proofs.

All contributions will be carefully refereed for international relevance and quality.

Submission of an article is understood to imply that the article is original and unpublished and is not being considered for publication elsewhere.

© 1990, ELSEVIER SCIENCE PUBLISHERS B.V.

0304-3800/90/\$03.50

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher, Elsevier Science Publishers B.V., P.O. Box 330, 1000 AH Amsterdam, The Netherlands.

Upon acceptance of an article by the journal, the author(s) will be asked to transfer copyright of the article to the publisher. The transfer will ensure the widest possible dissemination of information.

Submission of an article for publication entails the author(s) irrevocable and exclusive authorization of the publisher to collect any sums or considerations for copying or reproduction payable by third parties (as mentioned in article 17 paragraph 2 of the Dutch Copyright Act of 1912 and in the Royal Decree of June 20, 1974 (S. 351) pursuant to article 16 b of the Dutch Copyright Act of 1912) and/or to act in or out of Court in connection therewith.

Special regulations for readers in the U.S.A. — This journal has been registered with the Copyright Clearance Center, Inc. Consent is given for copying of articles for personal or internal use, or for the personal use of specific clients. This consent is given on the condition that the copier pay through the Center the per-copy fee for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. The per-copy fee is stated in the code-line at the bottom of the first page of each article. The appropriate fee, together with a copy of the first page of the article, should be forwarded to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, U.S.A.. If no code-line appears, broad consent to copy has not been given and permission to copy must be obtained directly from the author(s). All articles published prior to 1980 may be copied for a per-copy fee of US \$2.25, also payable through the Center. This consent does not extend to other kinds of copying, such as for general distribution, resale, advertising and promotion purposes, or for creating new collective works. Special written permission must be obtained from the publisher for such copying.

No responsibility is assumed by the Publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein.

Although all advertising material is expected to conform to ethical (medical) standards, inclusion in this publication does not constitute a guarantee or endorsement of the quality or value of such product or of the claims made of it by its manufacturer.

PRINTED IN THE NETHERLANDS

CONTENTS

Cumulative index

Publication Overview	231
Author index	233
Subject index	277

